U.S. Department of Energy
Office of River Protection
Mr. Michael K. Barrett
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 021158

Dear Mr. Barrett:

**CONTRACT NO. DE-AC27-01RV14136 – RESPONSES TO THE U. S. DEPARTMENT OF ENERGY, OFFICE OF SAFETY REGULATION'S QUESTIONS ON THE LIMITED CONSTRUCTION AUTHORIZATION REQUEST**

References: 1) CCN 020917, Letter, M. K. Barrett, ORP, to R. F. Naventi, BNI, "Office of Safety Regulation (OSR) Questions on the Limited Construction Authorization Request, 01-OSR-0224," dated June 19, 2001

Responses to the questions provided in the referenced letter are attached, with the exception of question 01-LCAR-008. The response to 01-LCAR-0008 is expected to be provided by July 13, 2001. If you have any questions, please contact Mr. Bill Spezialetti at (509) 371-5654 or Mr. Dennis Klein at (509) 371- 4867.

Very truly yours,

A. R. Veirup
Prime Contract Manager

JD/slr

Attachments:
1) LCAR Question Responses
2) LCAR Schedule Summary Chart
3) Summary Chart Event Logic Network
4) LCAR Level III Schedule
5) LCAR Level III Event Logic Network
6) Drawing DWG-24590-BF-C00010

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-001-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: P. Carier** |

**Description:**

*Review Guidance*: Section 3.2.3.3, Regulatory Acceptance Criteria, requires a description of a program that includes a Construction Occurrence Reporting Plan and that this plan should be consistent with incident reporting and investigation standards.

*LCAR Reference*: Section 5, Notification, Categorization and Consequence Assessment, references several SRD Safety Criteria, DOE Manual 232.1-1A, and several ISMP requirements. In some cases the referenced material is followed by a brief description of its applicability. These references provide a description of general requirements relevant to incident reporting and investigation for limited construction. However, the material provided in the section did not describe how these requirements interrelate and how these requirements formulate the elements of a Construction Occurrence Reporting Plan (Table S7-1 deliverable) discussed in Section 3.2.4, Review Procedures, of the LCAR Review Guidance.

*Question*: In order to verify the adequacy of BNI's Construction Occurrence Reporting Plan (or portions thereof applicable to limited construction), please explain:

What types of incidents will be addressed under the program for limited construction?

What are the criteria for reporting incidents (i.e., reporting thresholds)?

What methodology will be used to notify the appropriate regulatory authorities?

When will incidents be reported (timeliness criteria)?

How will incident reports be initiated, reviewed, and approved?

How will incidents be investigated?

How will incident causes be determined and appropriate actions identified, tracked and implemented?

How will BNI assign responsibility with regard to incident reporting and investigation?

**Contractor Response:**

## Questions 1 and 2

Following are the types of incidents and criteria for reporting that will be included in the occurrence reporting procedure to be used during limited construction. The groups are as defined in DOE Manual 232.1-1A and have been modified to address the specific hazards associated with the construction phase of the RPP-WTP.

Categorization of Occurrences by Group

*Group 1-Facility Condition*

**Fires/Explosions**

Off-Normal

(1) Any fire or explosion not required to be reported as an Unusual Occurrence that activates a fire suppression system (e.g., halon discharge, sprinkler heads activating) or seriously disrupts a significant amount of work activities at the construction site
(2) An unplanned fire that takes longer than 10 minutes to extinguish following the arrival of fire protection personnel; this does not include fires that do not disrupt normal facility operations and which are in the initial or beginning stage that can be controlled or extinguished by portable fire extinguishers, Class II standpipe, or small hose systems without the need for protective clothing or breathing apparatus.

**Loss of Control of Radioactive Material/Spread of Radioactive Contamination**

Note: The Radiological Control Manger will provide information necessary and will assist in categorization of any event within this group.

Unusual Occurrence

(1) Identification of radioactive contamination offsite in excess of 100 times any of the surface contamination levels specified in DOE 5400.5, RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT, Figure IV-1, that has not been previously identified and formally documented. For the first group listed in Figure IV- 1 (i.e., transuranics...) use the values specified in Attachment E.

(2) Loss of accountability of a sealed source or identification of lost radioactive material that exceeds 100 times the quantities specified in DOE N 441.1, RADIOLOGICAL PROTECTION FOR DOE ACTIVITIES.

Off-Normal

(1) Any unplanned spill of liquids in excess of one gallon, contaminated with radioactive material in concentrations greater than five times the Derived Concentration Guide values listed in DOE 5400.5, Figure III-1.

(2) Identification of radioactive contamination outside a radiological area (as defined in 10 CFR 835, Occupational Radiation Protection) or radiological buffer area established for contamination control, but within a Controlled Area, in excess of 10 times the total contamination levels in 10 CFR 835, Appendix D. For tritium, until a total contamination value is specified by 10 CFR 835 Appendix D, report contaminations in excess of 10 times 10,000 dpm/100cm2.

(3) Identification of radioactive contamination onsite that is not located within a Controlled Area, Fixed Contamination Area, or Soil Contamination Area, and is in excess of two times the total contamination levels in 10 CFR 835, Occupational Radiation Protection, Appendix D.

(4) Identification of radioactive contamination offsite in excess of any of the surface contamination levels, specified in DOE 5400.5, Figure IV-1, that has not been previously identified and formally documented. For the first group listed in Figure IV- 1 (i.e., transuranics, etc.) use the values specified in Attachment E.

(5) Loss of accountability of a sealed source or identification of lost radioactive material that exceeds ten times and is less than 100 times the quantities specified in DOE N 441.1, RADIOLOGICAL PROTECTION FOR DOE ACTIVITIES.

(6) Loss of accountability of a sealed source or identification of lost radioactive material that is one to ten times the quantities specified in DOE N 441.1, RADIOLOGICAL PROTECTION FOR DOE ACTIVITIES.

**Violation/Inadequate Procedures**

Off-Normal

(1) Any violation resulting in actual equipment damage in excess of $10,000.

(2) Use of inadequate procedures or deviations from written procedures that result in adverse effects on performance, safety, or reliability.

**Operations**

Unusual Occurrence

(1) Weather conditions/natural phenomenon causing serious disruption of work activities at the construction site.

(2) Any facility evacuation (excluding office space) in response to an actual occurrence, not including a precautionary evacuation, for an event that can be controlled and mitigated by employees or maintenance personnel assigned to the affected facility or activity.

Off-Normal

(1) Any unplanned and unexpected change in a process condition or variable adversely effecting safety, security, environment, or health protection performance sufficient to require termination (stopping or putting on hold) of a procedure related to major construction activities for greater than 4 hours.

Note: This does not apply when the procedure or plan governing performance of the procedure contains direction to stop or hold when certain conditions are encountered. This does not apply when stopping to clarify or question a procedure, retrieve tools, supplies, parts, and when responding to alarms or evacuations.

(2) Any unplanned electrical outages or unexpected consequences from a planned outage which seriously disrupt construction activities for one week

(3) Any unplanned outages of service systems (i.e., cooling water, steam, phones, communication systems, etc.) or unexpected consequences from a planned outage which: -

- disrupt construction activities for one week or longer

- which adversely effect safety, security, environment, or health protection performance.

*Group 2 - Environmental*

**Release of Hazardous Substances/Regulated Pollutants/Oil**

Unusual Occurrence

(1) Release of a hazardous substance, or regulated pollutant that exceeds a Comprehensive Environmental Response, Compensation, and Liability Act reportable quantity per 40 CFR 302 and 40 CFR 355 for chemicals and extremely hazardous substances.

(2) Any release that is not an Emergency as defined by DOE O 151.1, COMPREHENSIVE EMERGENCY MANAGEMENT SYSTEM but which requires immediate (less than 4 hours) reporting to Federal regulatory agencies or triggers specification action levels for an outside Federal agency.

(3) Any discharge of 100 gallons or more of oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

Off-Normal

(1) Release of a hazardous substance or regulated pollutant to controlled or uncontrolled areas that is not part of a normal, monitored release and which exceeds 50% of a Comprehensive Environmental Response, Compensation and Liability Act reportable quantity as specified for such material per 40 CFR 302.

(2) Any discharge of greater than 42 gallons but less than 100 gallons of oil of any kind or in any form: including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil outside of a permitted containment area.

(3) Any detection of a toxic or hazardous substance in a sanitary or storm sewer, waste or process stream, or any holding points where such a material is not expected to be found, considering the current detection method and historical detection method used.

Note: Detection means confirmation of toxic or hazardous substance by analysis

(4) Any controlled, uncontrolled, or accidental release not classified as an Unusual Occurrence but which will be reported in writing to State/local agencies in a format other than routine periodic reports.

Note: Oral notifications to regulatory agencies that are considered "courtesy" will not be categorized as an occurrence. Courtesy Oral notification requiring a follow-up written report to a regulatory agency will also not be categorized as an occurrence.

(5) Any controlled release of hazardous/regulated material that occurs as a monitored part of normal operation but exceeds what historical data and/or analysis shows is expected as a result of normal operations.

(6) Any general environmental monitoring where concentration increases to a level which exceeds what historical data and/or analysis shows is expected as a result of normal operations.

**Hazardous Material Contamination**

Unusual Occurrence

Discovery of onsite or offsite contamination due to DOE operations that does not represent an immediate threat to the public but exceeds a reportable quantity for such material per 40 CFR 302.

Off-Normal

Discovery of onsite contamination due to DOE operations that exceeds 50% of a reportable quantity for such material per 40 CFR 302.

**Ecological Resources**

Unusual Occurrence

Any occurrence causing significant impact to any ecological resource for which the DOE is a trustee (i.e., destruction of a critical habitat, damage to a historic/archeological site, damage to wetlands, etc.).

**Environmental Agreement/Compliance Activities**

Unusual Occurrence

Any occurrence under any agreement or compliance area that requires notification of an outside regulatory agency within 4 hours or less, or triggers any outside regulatory agency action level.

Note: Oral notifications to regulatory agencies that are considered "courtesy" will not be categorized as an occurrence. Courtesy Oral notification requiring a follow-up written report to a regulatory agency will also not be categorized an occurrence.

Off-Normal

(1) Any agreement, compliance, remediation or permit-mandated activity for which formal notification of enforcement has been received from the relevant outside regulatory agency that a site/facility is considered to be in noncompliance with a schedule or requirement (e.g., Notice of Violation, Notice of Deficiency, Notice of Intent to Sue, Notice of Noncompliance, Warning Letter, Finding of Violation, Finding of Alleged Violation, or a similar type enforcement action).

(2) Any occurrence under any agreement or compliance area that will be reported to outside agencies in a format other than routine periodic reports.

Note: Oral notifications to regulatory agencies that are considered "courtesy" will not be categorized as an occurrence. Courtesy Oral notification requiring a follow-up written report to a regulatory agency will also not be categorized an occurrence.

*Group 3 - Personnel Safety*

Note: The Industrial Safety Manager will provide necessary information and assistance in making these categorizations

**Occupational Illness/Injuries**

Unusual Occurrence

(1) Any occurrence due to DOE operations resulting in a fatality or terminal injury or illness.

(2) Any one occurrence resulting in 3 or more lost workday cases as defined by 29 CFR 1904.12.

(3) Any occurrence requiring in-patient hospitalization of 3 or more personnel or that has a high probability of resulting in a permanent disability.

(4) Personnel exposures to sufficient levels of hazardous substances or hazards that require the administration of medical treatment on the same day as the exposure and are above limits established by the Occupational Safety and Health Administration (refer to 29 CFR 1910) or American Conference of Governmental Industrial Hygienists (ACGIH), whichever is lower. These should include:
   a) Noise
   b) Non-ionizing radiation
   c) Chemical Agents
   d) Physical Agents
   e) Biological Agents

(5) Exposures to an Immediately Dangerous to Life and Health (IDLH) (as defined by 29 CFR 1910.120) condition without both appropriate personal protective equipment and procedures in place.

Off-Normal

(1) Any occupational illness or injury that results in inpatient hospitalization.

(2) Series of occupational illnesses from one event involving 3 or more people where at least one is a lost work day case.

(3) Personnel exposure in a single event to hazardous substances or hazards in excess of limits, as established by the Occupational Safety and Health Administration (refer to 29 CFR 1910), or American Conference of Governmental Industrial Hygienists (ACGIH), whichever is lower. These should include:
   a) Noise
   b) Non-ionizing radiation
   c) Chemical Agents
   d) Physical Agents
   e) Biological Agents

**Vehicular Incidents**

This section covers vehicular transportation incidents. Group 6 should also be considered in categorization for reporting. Transportation incidents without injury (e.g., those involving hazardous or radioactive material or financial loss) must be reported per the requirements of Group 6 or 7.

Unusual Occurrence

1) Any vehicular incident resulting in fatality(s), injury(s), or illness classified under Group 3, **Occupational Illness/Injuries**, Unusual Occurrence.

2) Any vehicular incident involving departmental property with a fatality(s) to a person(s) other than DOE personnel or DOE contractor personnel

Off-Normal

(1) Any vehicular incident with injury(s) involving departmental property resulting in a lost workday case.

(2) Any vehicular incident involving departmental property with injury(s) to a person(s) other than DOE personnel or DOE contractor personnel.

**Safety Concerns**

Off-Normal

(1) Unapproved use of flammable, toxic, explosive, corrosive, or other unsafe or dangerous processes, chemicals, materials, or methods not in accordance with standard operating procedures or work plans.

(2) Any shutdown of a work activity taken as a result of an Occupational Safety and Health Administration violation (e.g., trenching without adequate shoring or working at elevated levels without fall protection, when required).

*Group 4 - Personnel Radiological Protection*

Note: The Radiological Safety Manager will provide necessary information and assist in making these categorizations.

**Radiation Exposure**

Unless specified otherwise, all doses specified in the following requirements are calculated as the total effective dose equivalent, which is the sum of the committed effective dose equivalent due to radionuclides taken into the body (internal exposure) and the effective dose equivalent due to external exposure.

Unusual Occurrence

Determination of a dose that exceeds the limits specified in 10 CFR 835, Subpart C, Occupational Radiation Protection (for onsite exposure) or DOE 5400.5, Chapter II, Section 1 (for offsite exposures to a member of the public).

Off-Normal

(1) Any single occupational exposure that exceeds an expected exposure by 100 mrem.

(2) A single unplanned exposure onsite to a minor or member of the public that exceeds 50 mrem.

(3) Determination of a dose that exceeds the reporting requirement thresholds specified in DOE 5400.5, Chapter II, Section 7, for offsite exposures to a member of the public.

**Personnel Contamination**

Unusual Occurrence

(1) Any single occurrence resulting in the contamination of five or more personnel or clothing (excluding protective clothing) measured (prior to washing or decontamination) in accordance with DOE Radiological Control Manual, Article 338, or equivalent, at a level exceeding the values for total contamination limits identified in 10 CFR 835, Occupational Radiation Protection, Appendix D. The contamination level shall be based on direct measurement and not averaged over any area.

(2) Any occurrence requiring offsite medical assistance for contaminated personnel.

(3) Identification of personnel or clothing contamination offsite due to DOE operations in accordance with approved radiological procedures for determining personnel and/or clothing contamination, measured (prior to washing or decontamination) in accordance with the Radiological Control Manual, Article 338, or equivalent.

Off-Normal

(1) Any measurement of personnel or clothing contamination (excluding protective clothing) at a level equal to or exceeding five times the total contamination limits identified in 10 CFR 835, Occupational Radiation Protection, Appendix D, measured (prior to washing or decontamination) in accordance with the DOE Radiological Control Manual Article 338, or equivalent. The contamination level shall be based on direct measurement and not averaged over any area.

(2) Any measurement of personnel or clothing contamination (excluding protective clothing) at a level exceeding but less than five times the total contamination limits identified in 10 CFR 835, Occupational Radiation Protection, Appendix D, measured (prior to washing or decontamination) in accordance with the DOE Radiological Control Manual Article 338, or equivalent. The contamination level shall be based on direct measurement and not averaged over any area.

*Group 5 - Safeguards and Security*

**Criminal Acts**

Initial notification of events in this section shall follow normal occurrence reporting timelines. When reporting an occurrence that is the subject of an ongoing investigation under this

subgroup, the report shall be tailored to prevent jeopardizing the investigation. Full reporting may be delayed until completion of criminal investigations, if the reports would jeopardize the investigation.

Unusual Occurrence

(1) Violent assault/battery, murder, or unjustified use of deadly force while on DOE property.

(2) Theft/diversion/intentional destruction of Government property valued greater than $1,000,000.

(3) Racketeering or other organized criminal activity onsite.

Off-Normal

(1) At DOE facilities other than reactors and nonreactor nuclear facilities:

a) location of a suspicious device or noncredible bomb threat;

b) noncredible terrorist threat

c) noncredible sabotage threat.

(2) Theft/diversion/intentional destruction of government property valued between $10,000 and $1,000,000.

(3) Onsite felony conspiracies (i.e., blackmail, fraud, embezzlement, extortion and forgery) not involving classified information.

**Substance Abuse**

Off-Normal

(1) Any reportable occurrence under this procedure at least partially attributable to the use of alcohol or illegal drugs. "Partially attributable to the use of alcohol or illegal drugs" is defined when an employee is drug tested and receives a confirmed positive test for substances at the levels identified in the RPP-WTP internal procedure.

(2) A detection of personnel not fit for duty attributable to the use of alcohol or illegal drugs. "Not fit for duty" is defined when an employee is drug tested and receives a confirmed positive test for substances at the levels identified in the RPP-WTP internal procedures.

**Intelligence Activities**

Unusual Occurrence

Espionage, intelligence activities, treason, or subversive activities by or directed at DOE or DOE contractor personnel.

Off-Normal

When DOE or DOE contractor personnel believe that they may be the target of an attempted exploitation by an inimical interest, foreign or domestic.

**Physical Security System Computer**

Unusual Occurrence

Discovery of a computer incident (virus, hacker, sniffer, abuse, fraud, etc.) involving a physical security system that causes an alteration to a security feature, disruption of service, or loss of the confidentiality, integrity or availability of information, and results in an estimated $1,000,000 or more in damages or the cost of restoring services.

Off-Normal

Discovery of a computer incident (virus, hacker, sniffer, abuse, fraud, etc.) involving a physical security system that causes an alteration to a security feature, disruption of service, or loss of the confidentiality, integrity or availability of information, and results in an estimated $10,000 or more in damages or the cost of restoring services.

**Unplanned/Unscheduled Outage of Site Security System**

Off-Normal

Unplanned/unscheduled outage of any site security system, or major component of a site security system, not encompassed by the Unusual Occurrence category, that is not redundant and not authorized by a facility shutdown plan or a special security plan approved by DOE, that requires the physical presence of the protective force as a compensatory measure to prevent unauthorized access. This does not include the stationing of protective forces as a backup security system identified in a DOE approved facility security plan.

**Demonstrations/Protests**

Unusual Occurrence

(1) Disruptive activities impeding vehicular or employees access/egress to the facility.

(2) Attempted or actual trespass. Interpreted as protesters attempting to or gaining access into the facility.

(3) Malevolent activities causing property damage or bodily harm.

Off-Normal

Lawful activities warranting deployment of additional protective measures.

**Firearms**

Unusual Occurrence

Unauthorized firearms discharge resulting in personnel injury.

Off-Normal

Unauthorized firearms discharge resulting in no personnel injury.

**Other Security Concerns**

Unusual Occurrence

Unauthorized use, possession, or alteration of a security badge, credential, shield, or other form of official identification (to include blank badge stock/form) to gain access to the facility.

Off-Normal

(1) Discovery of prohibited items within the fenced area of the facility that:

a) are suspected of being positioned for the purpose of aiding and abetting a malevolent act; or

b) are, of themselves, illegal

Note: Items discovered outside the fenced area of the facility that are legal under Federal, State, and local laws are not reportable, even if the discovery of such items would otherwise be reportable under this paragraph.

(2) Onsite death of cleared DOE or DOE contractor personnel by unnatural causes (e.g., suicide, drug overdose).

(3) Loss of security badges in excess of 5 percent in a calendar year.

(4) Onsite malicious mischief, disorderly conduct, or vandalism which disrupts facility activity for grated than one hour or causes damage between $10,000 and $100,000 at the facility.

*Group 6 - Transportation*

Transportation of DOE Hazardous Materials. Transportation occurrences are incidents related to the transportation of DOE materials, including hazardous materials, hazardous substances, and

hazardous wastes by vehicular, vessel, air, or rail mode. The requirements for reporting noncompliances and violations associated with such transfers are qualified in this procedure. The Federal regulations for offsite transportation are found in 10 CFR Part 71, 49 CFR Parts 106-180, 200-250, and 350-399, 46 CFR (vessel), ICAO/IATA, IMDG, 14 CFR (aviation), and several DOE Orders. For onsite transportation (within controlled boundaries of the facility), the transportation regulations for hazardous materials transfers are the same as offsite (DOT's Hazardous Materials Regulations) or as defined in an approved facility Transportation Safety Document.

DOE facilities receiving materials from a DOE shipper that are not in compliance with appropriate regulations, as qualified by this procedure, must report the discrepancies to the DOE shipper who will prepare an Occurrence Report and implement suitable corrective actions. If such a shipment is received from a non-DOE shipper and meets the reporting criteria of this Manual, the DOE organization will notify the non-DOE shipper of the apparent noncompliance and will prepare an Occurrence Report stating that the non-DOE shipper has been notified. These reporting criteria are in addition to any required by DOT for contractors subject to the DOT regulations.

Unusual Occurrence

(1) Any packaging or transportation activity (including loading, unloading, or temporary storage) involving the offsite release of radioactive material, etiologic agents, a reportable quantity of hazardous substance, or marine pollutants.

(2) Any shipment of radioactive material that arrives at its destination with radiation or contamination levels greater than DOT limits, or results in personnel radiation exposure higher than permitted in Federal permits, Federal regulations, or DOE standards.

(3) Any shipment or onsite transfer of radioactive material or hazardous waste that arrives at its destination with an unaccounted for package or an irreconcilable shipping paper, waste manifest, or onsite transfer authorization.

(4) A vehicle, vessel, rail or air incident or accident (without personal injury) that presents significant impact on the ability of a facility to conduct transportation operations and:

   a) results in release of radioactive or hazardous materials above Federal permit, Federal regulatory, or DOE Standard limits

   b) involves performance degradation of safety equipment

   c) is the result of failure or degradation of administrative controls required to ensure safety.

(5) Violations of the Federal Motor Carrier Safety Regulations or the Hazardous Materials Regulations if those violations are determined by DOT inspection and result in a fine (monetary penalty).

Off-Normal

(1) Any packaging or transportation activity involving:

a) the offsite release of non-radioactive hazardous material, or any quantity of hazardous waste

b) the onsite release of radioactive materials, etiologic agents, hazardous substances, hazardous waste, or marine pollutants.

(2) A vehicle, vessel, rail or air incident or accident (without personal injury) that affects the ability of a facility to conduct transportation operations and:

a) results in release of radioactive or hazardous materials below limits established by Federal permits, Federal regulations, or DOE Standard limits but must be reported to State or local agencies

b) is the result of operational procedural violations, including maintenance or administrative procedures.

(3) Noncompliances (potential violations) of the DOT Hazardous Materials Regulations or the transportation and packaging requirements of the Nuclear Regulatory Commission involving:

a) errors made by the shipper in materials description, marking, labeling, or placarding

b) an unqualified person signing shipping papers

c) the highway routing selection requirements for highway route controlled shipments or the notification requirements for spent-fuel shipments not being observed

d) the separation and segregation tables for hazardous materials not strictly adhered to

e) the applicable packaging requirements for the assembly, handling, or selection of a package not being in accordance with the applicable regulations

(4) Noncompliances (potential violations) of the Federal Motor Carrier Safety Regulations involving:

a) a contractor driver operating a DOE-owned motor vehicle after a positive drug test or failure of an alcohol test

b) an unqualified driver operating a vehicle (medical, driver's license, or training not in compliance)

c) the carrier (contractor management) not having required insurance

d) a vehicle that failed inspection not being removed from service

e) a specification cargo tank with expired inspection being in service with hazardous materials

f) a driver's log book is deliberately misrepresented

g) the carrier (contractor management) failing to perform random or periodic drug or substance-abuse testing.

(5) Any violation of the Hazardous Material Regulations or Federal Motor Carrier Safety Regulations if that violation is determined by DOT inspection and does not result in a penalty.

*Group 7 - Value Basis Reporting*

Value basis reporting includes items based on cost or the identification of defective items, materials, or services. A defective item, material, or service shall be identified and reported to allow the initiation of a Headquarters investigation and make all Departmental Elements aware of the defect and initiate actions to eliminate common mode failures due to substandard, counterfeit, misrepresentation, or fraudulent practices of suppliers.

**Cost Based Occurrences**

Any occurrence specifying cost as a basis for reporting, unless otherwise stated, will be classified by the following monetary values necessary to repair, replace, or otherwise restore a facility/system/component to acceptable operation. Costs used for reporting should be reasonable initial estimates.

Unusual Occurrence

Estimated loss or damage to DOE or other property amounting to $1,000,000 or more, or estimated costs of $1,000,000 or more required for cleaning (including decontamination), renovating, replacing, or rehabilitating structures, equipment, or property.

Off-Normal

Estimated loss or damage to DOE or other property amounting to between $10,000 and $1,000,000 (for vehicle/aircraft the lower limit is $5,000 or, for insurance purposes, considered a total loss. Such damage to vehicles has to occur as the result of one accident not as the result of multiple accidents over an extended period of time) or estimated costs within these limits required for cleaning (including decontamination), renovating, replacing or rehabilitating structures, equipment, or property.

**Defective Item, Material, or Service**

Off-Normal

(1) Discovery of any actual or potential defective item, material, or service, including any suspect, counterfeit, or substandard product, in any application whose failure could result in a substantial safety hazard. Examples include the identification of suspect, counterfeit or substandard products found in:

a) cranes, elevators, and fork lifts - items used in the critical load bearing path of such handling and lifting equipment

b) aircraft - items used in engines or to attach engines, wings, tails, or landing gear

c) vehicles - items used in engines, brakes or steering mechanisms

d) critical components used in personnel safety equipment

e) facilities

*1.* items used to contain:

*a.* radioactive fluids
*b.* high temperature or pressure steam or fluids
*c.* other hazardous material

*2.* Safety Class SSCs or Safety Significant SSCs supporting the safe operation or shutdown of a facility, system, or process that could result in a performance degradation.

(2) Discovery of any actual or potential defective item, material, or service, including any suspect, counterfeit, or substandard product, in any application whose failure could not result in a substantial safety hazard. This does not include office supplies, equipment, or household products.

Note: The definition of defective item, material, or service does not include parts or services which fail or are otherwise found to be inadequate because of random failures or errors within accepted reliability levels.

*Group 8 - Facility Status*

This section involves the change of facility status that may affect the performance goals of a facility. The potential inability to meet performance goals may significantly affect other major and minor facilities throughout the complex. Performance goals are operating objectives necessary to accomplish an approved facility, process, or activity mission on a periodic basis. The duration of the goal may be short or long term, but should not exceed the goals of the annual operating plan.

**Facility/Process/Activity Unscheduled Shutdown**

Off-Normal

Any unscheduled shutdown of a facility, process, or activity that resulted or may result in the failure to meet approved performance goals.

**Existing Facility/Process/Activity Shutdown Extension**

Off-Normal

Any increase in an approved shutdown schedule of 1 month or greater or that resulted or may result in the failure to meet approved performance goals for an existing facility, process, or activity.

**New Facility/Process/Activity Start-up Delay**

Off-Normal

Any delay in an approved start-up schedule of 1 month or greater and which resulted or may result in the failure to meet approved performance goals for a new facility, process, or activity.

*Group 9 - Nuclear Explosive Safety*

Not applicable

*Group 10 - Cross-Category Items A.*

**Collectively Significant Related Occurrences**

Unusual Occurrence

A series of related occurrences which individually do not warrant reporting under preceding criteria but which collectively are considered significant enough to warrant reporting.

Off-Normal

A series of related occurrences which individually do not warrant reporting under preceding criteria but which collectively are considered significant enough to warrant reporting.

**Near Miss Occurrences**

Unusual Occurrence

A near miss to one of the reporting classifications under preceding categories where the conditions necessary to cause an Unusual Occurrence existed (i.e., all barriers to event initiation were compromised).

Off-Normal

(1) A near miss to one of the reporting classifications under preceding categories where the conditions necessary to cause an Off-Normal Occurrence existed (i.e., all barriers to event initiation were compromised).

(2) A near miss to one of the reporting classifications under preceding categories where the conditions necessary to cause a reportable occurrence were prevented from existing by one remaining barrier after other barriers had been compromised (i.e., one additional independent failure/degradation was necessary for event initiation to be possible).

**Potential Concerns/Issues**

Unusual Occurrence

(1) An occurrence that may result in a significant concern, by the press or general population, particularly in the offsite transportation and radiological areas, or could damage the credibility of the Department.

(2) Identification of potential concerns or issues that are deemed to be worthy of reporting.

Off-Normal

(1) Any event resulting in the initiation of a Type A or B investigation as categorized by DOE O 225.1, ACCIDENT INVESTIGATIONS.

(2) Identification of potential concerns or issues, that are deemed to be worthy of reporting.

## Question 3

The following methodology will be used to notify the appropriate regulatory authorities:

Off-Normal Occurrences

As soon as practical, the Facility Manager (FM) or the Facility Manager Designee (FMD) will notify the ES&H Manager, Responsible Manager (RM), Price Anderson Amendments Act (PAAA) Coordinator, and the ORP Facility Representative (FR) that an event has been categorized as an Off-Normal Occurrence.

Unusual Occurrences

The FM/FMD will notify the ES&H Manager, Responsible Manager (RM), Price Anderson Amendments Act (PAAA) Coordinator, and the ORP Facility Representative (FR) that an event has been categorized as an Unusual Occurrence as soon as practical, but within 2 hours of catergorization.

DOE Headquarters Emergency Operations Center will be also be orally notified within 2 hrs of categorization of an Unusual Occurrence. A facsimile of the notification will also be provided to the DOE Headquarters Emergency Operations Center.

Follow-up Notifications

The FM/FMD will make follow-up notifications to the ES&H Manager, ORP FR, and the DOE Emergency Operations Center as soon as practical, but no later than 2 hours after recategorization of the following information:

- An Off-Normal Occurrence has been upgraded to a Unusual Occurrence.

- Any further degradation in the level of safety or impact on the environment, safeguards and security, health, or operations of the facility or other worsening conditions subsequent to the previous notifications.

## Question 4

The timeliness of incident reporting is as follows:

Written notifications of all reportable occurrences will be provided to the regulator before the close of the next business day from the time of the categorization of the occurrence (not to exceed 80 hours). An Update Occurrence Report shall be submitted when significant new information (including changes in categorization) is available.

Completion of the Final Occurrence Report is required when the analysis of the occurrence has been completed, root cause and contributing cause(s) finalized, corrective action(s) determined and scheduled, and lessons learned identified. The Final Occurrence Report will be submitted to the regulator within 45 days of categorization of the occurrence. If the required analysis cannot be completed within 45 calendar days after categorization, an Update Report shall be submitted within 45 days. The Update Report shall explain the delay and provide an estimated date for submittal of the Final Report.

## Questions 5 and 6

Incident investigation and report initiation, review, and approval are as follows:

After the occurrence, the FM/FMD will initiate the collection of information pertaining to the event. Collection of data will be conducted with the assistance of the Responsible Manager or other individuals deemed necessary.

A graded approach will determine the level of effort required to investigate the cause of an occurrence. The graded approach is based on the severity or risk associated with the event. Using the graded approach, all occurrences must have some degree of investigation. The investigation can take the form of a meeting with involved individuals, a single person gathering information, or a Root Cause Analysis Team trained in accident investigation techniques conducting a formal investigation.

If determined to be necessary a critique will be conducted in accordance with approved procedure(s)

If a formal investigation is determined to be needed it will be conducted in accordance with approved procedure(s).

The FM/FMD will obtain approval of the ES&H Manager and the Site Manger or their designees prior to uploading the Final Occurrence Report into the ORPS database.

**Question 7**

Incident causes will be determined and appropriate actions identified, tracked, and implemented as follows:

The incident investigation process described above will determine the cause(s) and appropriate corrective/preventative actions.

A Final Occurrence Report will be uploaded into the ORPS database when an analysis of the occurrence has been completed, and the significance, nature, and extent of the event or condition identified, the root cause, contributing cause(s), direct cause(s) identified, corrective action(s) to be taken to correct the condition and prevent recurrence scheduled, and lessons learned identified. The ORPS database will be used to track identified actions to completion.

**Question 8**

Assignment of responsibilities with regard to incident reporting and investigation is as follows:

The responsibility for incident reporting is assigned to the FM/FMD. The FM/FMD will assign incident investigation responsibilities to the appropriate Responsible Manager using the graded approach described above

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-002-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: K. Chen** |

**Description:**

*Review Guidance*: Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of the excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate. This information includes soil compaction criteria.

*LCAR Reference*: Section 1.3.1.2.5, Soil Compaction Testing, of the LCAR states that one of the standards used for soil compaction testing is ASTM D2922, titled as "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)".

*Question*: Standard ASTM D2922 is one of the implementing standards listed in Safety Criterion 4.1-2 of the Safety Requirements Document (SRD). However, the title for ASTM D2922 in the SRD is "Standards Test Method for Laboratory Determination of Moisture Content of Soil". What is the correct standard and title?

**Contractor Response:** The LCAR title for ASTM D2922 is correct. The SRD will be updated to reflect the correct title.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-003-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: K. Chen** |

**Description:**

*Review Guidance*: Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of the excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate. This information includes the demonstration that soil bearing capacity will be sufficient to support buildings.

*LCAR Reference:* Section 1.4, Potential for Design Changes, of the LCAR states that the BNI geotechnical investigation report confirms that the site soil conditions have adequate capacity to support these building loads without significant deflections and indicates that the soil is capable of sustaining significantly greater bearing loads than those estimated. When the final seismic analysis is completed, estimated soil loads will be replaced by calculated loads and confirmed to be acceptable.

*Question*: What is the scope of the final seismic analysis discussed above? Will future construction activities, beyond those as described in the current LCAR, be performed before completion of the final seismic analysis?

**Contractor Response:** The seismic analysis scope will include those activities described in the "Seismic Analysis and Design Approach," RPT-W375-RU00005. This analysis will provide loads used to determine building loads imposed on the soil.

No, there are no permanent structures being constructed during the LCAR scope. The mud mat is not a structure, but a cap over the soil to provide a construction work surface and protect the compacted soil.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-004-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: K. Chen** |

**Description:**

*Review Guidance*: Section D of the review guidance, requires that the information on the design and installation of mud mats for the process buildings be provided.

*LCAR Reference*: Section 1.3.1.3, Mud Mat Placement, of the LCAR states that the acceptability of the mud mat material is confirmed through testing to ensure that backfill requirements are met.

*Question*: What are the testing requirements for the mud mat?

**Contractor Response:** Unconfined compressive tests in accordance with the technical specification for structural backfill will be performed to confirm minimum strength. This is a standard ASTM test performed on cementitious products. Although not structural concrete, and not subject to the requirements of ACI 318, the mud mat is a concrete material that will be tested to confirm minimum strength.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-005-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: R. Garrison** |

**Description:**

*Review Guidance*: Section D items 2 and 15.

…BNI should provide a complete description of all LCAR activities for which authorization is requested. This description should include the following:

2. Temporary facilities and services installed under the LCA; drawings may be included or referenced.
15. Design, design change, and modification processes for activities performed during the LCA.

*LCAR Reference*: Section 1.3.2.1 p7, section 1.3.3.7 p11, and section 1.4 p13.

1.3.2.1…Utility trenches will be excavated to allow installation of pipelines shown… Portions of the permanent electrical duct bank system shown…will also be installed to the extent practical to facilitate expediting the construction schedule. No ITS duct banks will be installed

1.3.3.7…No permanent power cables will be installed during limited construction. Construction power will be routed in temporary concrete-encased duct banks, spare conduits in permanent non-ITS duct banks, and by overhead power distribution lines around the perimeter of the storage and laydown areas as shown…

1.4…The most likely source of changes initiated within the project would result from ongoing redesign…Installations that are scheduled to be completed during limited construction that could be impacted by these ongoing design activities are as follows:

- Primary Facility Excavations
- Permanent Underground Utilities

*Question*: It is likely that during the lifecycle of the facility, the location of abandoned in place temporary components will be required for completion of facility modifications. How will temporary installations that will be abandoned in place, be documented sufficiently to prevent interferences with future installations? Are temporary installations that will be abandoned in place included in the baseline design, or will they be added by change notice at the time of abandonment?

**Contractor Response:** Construction will document the location of all underground facilities and utilities. A guide will be developed describing how U/G items will be documented. This guide is scheduled to be completed prior to commencing limited construction activities.

Temporary installations that are abandoned in place will be shown on the applicable project drawings after information is provided by construction. Abandoned installations will not be considered part of the baseline design.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-006-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: Y. Gibbons/M. Black** |

**Description:**

*Review Guidance*: Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of the excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate.

*LCAR Reference*: Section 1.3.1.2.1, of the LCAR states that a geotechnical engineer will monitor the excavation process, inspect the in-situ soil to confirm that sub-grade conditions are consistent with the data contained in the Geotechnical Investigation Report.

*Question*: What are the required qualifications for the geotechnical engineer monitoring the excavation? How will the geotechnical engineer document that the sub-grade soil conditions are consistent with the data contained in the Geotechnical Investigation Report?

**Contractor Response:** The geotechnical engineer will be a Bechtel staff engineer proficient in the area of geotechnical assessment of soils. Inspection of the excavated surface by this individual is required prior to placement of the mud mat.

Written notification of this review and acceptability or remediation requirements will be provided in writing to the subcontractor and project file.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-007-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: R. Gilbert** |

**Description:**

*Review Guidance:* Section E.1.3.3 states "BNI provides an event logic network showing the limited construction critical path activities."

*LCAR Reference:* The LCAR transmittal letter states "Current baseline schedules including activities within the scope of this LCAR are provided in Attachment 3." Attachment 3 provides a Level 3 schedule of procurement and construction activities from October 2001 through August 2007. Predecessor and successor activities are identified; however, critical path and logic are not clearly identified.

*Question:* What is the critical path through construction authorization, and the logic for the critical path activities? What are the project impacts associated with delaying proposed LCAR activities? Why are specific activities defined in the LCAR required before construction authorization?

**Contractor Response:** The critical path and required LCAR activities through construction authorization (placing initial concrete on 11/4/02) is shown on the attached limited construction schedule summary chart and associated event logic network. A detailed event logic network and level III LCAR schedule are also attached. LCAR activities 1 through 5 and 26 are precursors required to support concrete placement per the baseline schedule. Delaying these activities would result in delaying the start of concrete placement and subsequent milestones including hot commissioning in 2007. Temporary construction facilities and services included on the schedule are required to support construction activities. Portions of the permanent underground utilities will be used to support construction activities and are included in the LCAR to improve efficiency and reduce cost. The portion of the permanent ground grid included in the LCAR (activity 0007) is associated with the perimeter fence. The perimeter fence requires grounding for personnel protection during limited construction and installing portions of the permanent grounding to accomplish this is prudent and cost effective. Construction of the administration building (activity 0014) is included in the LCAR as a contingency in support of efficient use of resources during limited construction. Inclusion of the administration building presents a potential cost saving. It has been determined that pre-assembly of stainless steel liners during limited construction is not required. The LCAR will be updated to remove this activity (see response to question # 25).

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-009-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: F. Han** |

**Description:**

*Review Guidance*: Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance states that the footprints and elevation of the compacted sub-grades for buildings should be provided.

*LCAR Reference*: Appendix A of the LCAR provides related drawings for the LCAR construction activities.

*Question*: The elevations of building foundations are typically based on the elevation above sea level for Hanford Site facilities. The LCAR package uses grade as 0 feet elevation but does not provide the reference to the above sea level elevation. This could result in uncertainty in the true elevations of various foundations. How will true elevations be established?

**Contractor Response:** The WTP project has established reference elevations for each of the primary process facilities. The 0 foot elevation is a reference point for each facility. A corresponding mean sea level reference for each facility is also identified on design drawings.

The vertical datum is the North American Vertical Datum of 1988 (NAVD88).

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-010-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: F. Han** |

**Description:**

*Review Guidance*: Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of the excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate.

*LCAR Reference*: Section 1.2.1, Primary Process Facilities, of the LCAR states that loads on the base mat will be distributed uniformly to the surface being excavated as part of the LCAR scope. In the same paragraph, the LCAR also states that the soil interface will be prepared to a point of readiness for structural work.

*Question*: What is the technical basis for the statement that loads on the base mat will be distributed uniformly to the surface being excavated? What is meant by "soil interface will be prepared to a point of readiness"?

**Contractor Response:** The structural system selected for the process facilities are structural mats. This system was selected for its ability to accommodate large loads with limited settlement. These mats are at least 5 feet thick. Compared to the stiffness of the soil, the mats are significantly more rigid and will distribute loads across the soils surface. Evaluations of the loadings under the mats and mat strength will be assessed as part of the structural analysis.

The soil interface is the portion of the basemat in contact with the soils or mud mat. Preparation of this material will be in accordance with the technical specification for excavation and backfill. Disturbed insitu soils will be re-compacted in accordance with the Excavation and Backfill specification. In the event that unacceptable materials are encountered in the excavation, they will be removed under the direction of the qualified geotechnical engineer and replaced with compacted fill material.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-011-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: F. Han** |

**Description:**

*Review Guidance*: Section 2.3.3, Regulatory Acceptance Criteria, of the review guidance requires the description of the excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate.

*LCAR Reference*: Section 1.3.1.2.3, Excavation, of the LCAR states that a soil retention system may be installed, extending below the elevation of the open cut excavation. These sheet piles may remain in place, as a form for the construction of the concrete walls.

*Question*: The deepest opening of the excavated area is in the pretreatment building (approximately 50 feet below grade). Driving sheet piles to such depth may result in potential large out-of-plumb construction. Further, after the sheet piles are installed, the soil within the surrounded sheet piles needs to be excavated. This again will result in certain deflection in the sheet piles due to soil pressures from the outside. With the construction tolerance and deflection from soil pressure, potentially large displacements of the sheet pile from its original plumbing line may occur. What impact do these deflections have on foundation and wall design?

**Contractor Response:** None, accommodations will be made for deformation of the soil retention system which may occur during installation or as a result of excavation activities. The minimum wall thickness will not be compromised as a result of the installation tolerances.

The technical specification for design of this system limits the deformation of the system. The size of the excavation and location of the retention system will include sufficient margin to account for deformation of the retention system to ensure the foundation and walls can be constructed to meet design specifications.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-012-Q** | **Date Opened: 6/11/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: A. Hawkins** |

**Description:**

*Review Guidance*: Section 3.1.3.3, "Regulatory Acceptance Criteria," of the review guidance states, "The LCAR must commit to an approved QAP for limited construction. BNI's QAP for limited construction is acceptable if…it describes an acceptable QA program for the identified limited construction activities that can be implemented."

*LCAR Reference*: The LCAR uses the terms "QA Program" and "QA Manual." "QA Manual" is understood to be QAM-24590-01-00001. "QA Program" is not defined, and its definition is not clear from the BNI usage. For example, Section 3.2, "Quality Assurance," states, "The QA Program will be approved by OSR…." As submitted by BNI, OSR is reviewing the QA Manual for possible approval. This section also states, "QA Program section numbers may change due to program revisions." The sections of the QA Manual are based on the standard (NQA-1) selected by BNI, and should remain consistent.

*Question*: How is the term "QA Program" defined?

**Contractor Response:** The term QA Program will be changed to QA Manual for consistency and congruence with other project terminology.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-013-Q** | **Date Opened: 6/11/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: A. Hawkins** |

**Description:**

*Review Guidance*: Section 3.1.3.3, "Regulatory Acceptance Criteria," of the review guidance states, "The LCAR must commit to an approved QAP for limited construction. BNI's QAP for limited construction is acceptable if…it describes an acceptable QA program for the identified limited construction activities that can be implemented."

*LCAR Reference*: Section 3.4.1 of the LCAR states, "Grading will be accomplished through application of varying depth, methods, and responsibility for inspection activities as appropriate to the importance of the item or activity." The QA Manual (Policy Q-02.1) describes a grading process that considers a number of risk factors that do not include "…depth, methods, and responsibility for inspection activities."

*Question*: What process will be used to define the scope, depth, and rigor of the application of QA requirements (grading)?

**Contractor Response:** The process described in QAM section Q2.1 will be utilized to establish the scope, depth and rigor of the application of QA requirements. Results of the evaluation (and therefore the approach for grading) will be communicated by Engineering to Construction via specification or design drawing. LCAR Section 3.4.1 will be updated to reflect this response.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-014-Q** | **Date Opened: 6/12/01** |
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| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: A. Hawkins** |

**Description:**

*Review Guidance*: Section 3.1.3.3, "Regulatory Acceptance Criteria," of the review guidance states, "The LCAR must commit to an approved QAP for limited construction. BNI's QAP for limited construction is acceptable if…it describes an acceptable QA program for the identified limited construction activities that can be implemented."

*LCAR Reference*: The QA Manual requires (Q-15.1, "Control of Nonconforming Items"), "Nonconforming items that are subsequently re-worked, repaired, or replaced are to be inspected and/or tested to either the original requirements or to specified alternative requirements." The LCAR requires (Section 3.4.1, "Nonconforming Items"), "Reworked and repaired items will be inspected, tested, or reviewed in accordance with original requirements or approved alternate requirements, respectively."

*Question*: What is the approval process for alternate requirements?

**Contractor Response:** LCAR Section 3.4.1 will be updated to use the term "specified" consistent with the QA Manual.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-015-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: A. Hawkins** |

**Description:**

*Review Guidance*: Section 3.1.3.3, "Regulatory Acceptance Criteria," of the review guidance states, "The LCAR must commit to an approved QAP for limited construction. BNI's QAP for limited construction is acceptable if…it describes an acceptable QA program for the identified limited construction activities that can be implemented."

*LCAR Reference*: Section 1.3.3.3 of the LCAR states, "A materials testing laboratory and office will be located within the concrete operations area for ready access to concrete production activities. The materials testing laboratory and office is not an ITS SSC. However, the laboratory will perform ITS testing of soils during limited construction as described in Section 1.3.1.2.5." (Note also that Section 1.3.1.3 of the LCAR states: "The installation of the mud mats is not an Important to Safety activity. However, inspection of the mud mats is quality related and is part of the authorization basis.)

*Question*: To what extent will the materials testing laboratory service: (a) be evaluated and qualified by BNI before use and (b) follow the approved quality program?

**Contractor Response:** The materials testing laboratory subcontractor is required to provide a Quality Assurance plan. The testing laboratory's QA plan is required to comply with the applicable sections of NQA-1 identified in the Material Testing Services technical specification. BNI QA will review this program and monitor implementation of the vendor's plan.

Note: Section 1.3.1.3 of the BNI LCAR does not include the statement cited by the reviewer.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-016-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: A. Hawkins** |

**Description:**

*Review Guidance*: Section 3.1.3.3, "Regulatory Acceptance Criteria," of the review guidance states, "The LCAR must commit to an approved QAP for limited construction. BNI's QAP for limited construction is acceptable if…it describes an acceptable QA program for the identified limited construction activities that can be implemented."

*LCAR Reference*: The sub-section entitled "Subcontract Administration" within Section 3.4.1 states: "Subcontractors performing important to safety activities are required to have an approved quality program appropriate to the work, or will work directly to the WTP QA Program.

- If implementing an approved subcontractor quality program, activities will be verified to be in compliance with contract quality requirements by Quality Assurance or Quality Control through audit, surveillance, and document review, as appropriate.

- If working to the WTP QA Program, activities will be performed to the appropriate construction procedures with monitoring and inspection by Field Engineering and Quality Control as specified therein."

The BNI QA program does not describe any difference in the oversight provided for subcontractors working to their own QA program and those working to the BNI QA program.

*Question*: Why would important-to-safety activities performed by subcontractors who work to the WTP QA Program not also be subject to "audit, surveillance, and document review, as appropriate" in addition to monitoring and inspection?

**Contractor Response:** Subcontractors will be subject to "audit, surveillance, document review, as appropriate" as described in the QA manual. The subject section is not intended to exclude these activities, but is focussed on responsibilities of the field Construction organization and does not include activities being performed by the QA organization.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for the Contractor** |
|---|---|
| **Question #: 01-LCAR-017-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: N. Kaushal** |

**Description:**

**Review Guidance:** ***Section E 2.33 Regulatory Acceptance Criteria states in part "… submittal is acceptable if it sufficiently describes … bases for any work activities in the LCA scope that are considered important-to-safety."***

*LCAR Reference***:** Section 1.3.3.2 states " the batch plant … will utilize qualification testing to establish its ability to produce consistent quality concrete."

*Question:* What facilities will be used for this concrete qualification testing?

**Contractor Response:** The same subcontractor that performs the soil testing will perform the concrete qualification testing. The tests may be performed at the onsite materials testing laboratory or may be performed at offsite facilities. The testing subcontractor will perform these tests under the approved QA plan.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for the Contractor** |
|---|---|
| **Question #: 01-LCAR-018-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: N. Kaushal** |

**Description:**

*Review Guidance:* Section E 2.3.3-Regulatory Acceptance Criteria, first paragraph, states that "BNI should identify and describe the following important-to-safety features as they apply to the LCAR submittal."

Per item 8 of the same section, "capability of the civil testing laboratory to **repeatedly and reliably** perform tests to verify that important-to-safety attributes … conform to the design requirements" (emphasis added).

*LCAR Reference:* Section 1.3.3.3-Materials Testing Laboratory and Office, provides a short statement about the materials testing laboratory.

*Question:* How will the capability of the materials testing laboratory be established to "repeatedly and reliably" perform tests?

**Contractor Response:** As stated in LCAR Section 1.3.1.2.5, "Application of ASTM D3740 will ensure the capability of the civil testing laboratory to repeatedly and reliably perform tests to verify that important to safety attributes, such as soil density and compaction and moisture content, conform to design requirements."

Material testing will be performed in accordance with an approved QA plan and BNI QA will monitor subcontractor compliance with his approved QA plan.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-019-Q** | **Date Opened: 06/11/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: J. Polehn** |

**Description:**

*Review Guidance:* Section 6.0, Radiation Protection Program, of the review guidance requires the submittal to adequately reference and commit to an approved Radiation Protection Program (RPP). The RPP, Rev. 7 (Section 6) refers to a Radiological Control Program.

*LCAR Reference:* Section 4.1 [Radiation Protection Program for Construction], last sentence, "SRD Safety Criteria 5.0-1 and 1.0-10 and ISMP Section 2.3 are applicable to the RPP for Design and Construction." SRD SC 5.0-1 states, "The RPP-WTP Radiological Controls Program shall address all items in 10 CFR 835 and the additional Safety Criteria provided in SRD Volume II Sections 5.1 and 5.2." In Attachment 2 of the LCAR, Comment/Question # 00-LCAR-021-Q, the response states, "The RCP has been cancelled." The two LCAR statements are inconsistent.

*Question:* How will BNI comply with SRD SC 5.0-1?

**Contractor Response:** SRD Safety Criterion 5.0-1 states:

> "A Radiation Protection Program (RPP) compliant with 10 CFR 835 shall be developed and submitted for approval to DOE.
>
> The River Protection Project - Waste Treatment Plant (WTP) Radiological Controls Program shall address all items in 10 CFR 835 and the additional Safety Criteria provided in SRD Volume II, Section 5.1 and 5.2."

Bechtel National, Inc. (BNI) has submitted a 10 CFR 835 compliant RPP which has been approved by DOE (01-OSR-0123). BNI is currently in the DOE authorized implementation period of the approved RPP. The Radiological Controls Program being put in place will be fully compliant with Safety Criterion 5.1 and 5.2 upon completion of the implementation period. It should be noted that ABCN-24590-01-00005 is currently being processed for submission to the DOE. This ABCN corrects the conflicts with safety criterion 5.1 and the DOE approved RPP. Further, Safety criterion 5.2 contains no requirements.

The "RCP" being referred to in the response to question 00-LCAR-023-Q on the original BNFL LCAR submittal is referring to a manual that has been cancelled. The Radiological Controls Program referred to Safety Criterion 5.0-1 is the actual radiological program currently being implemented in the WTP.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-020-Q** | **Date Opened: 06/12/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: J. Polehn** |

**Description:**

*Review Guidance;* Section D, Information Required in the LCAR, item 16, "BNI should provide a complete description of all LCAR activities for which authorization is requested. This description should include the following:….16. Results of pre-LCA radiological surveys and radiological sampling."

*LCAR Reference:* Attachment 5, LCAR-Review Guidance matrix, specifies that LCAR Review Guidance item D.16 is addressed by LCAR Section 4.2. Section 4.2, Radioactive Contamination Detected During Construction states, "BNI does not intend to perform additional site characterization and will establish a monitoring program initially based on the characterization specified in HNF-2067." HNF-2067 contains data obtained prior to disturbance of the site.

*Question:* What specific plans does BNI have for radiological surveys and sampling during limited construction? What radiological surveys and sampling did CH2MHill, or other contractors, conduct during site clearing and infrastructure work and what were the results?

**Contractor Response:** The DOE does not have the WTP construction site under radiological control. The site is currently being managed by DOE/others without any radiological posting. DOE has provided no information that would indicate the construction site is an unplanned release site. BNI has reviewed TWRS Phase I Privatization Site Pre-Construction Characterization Report, HNF-2067, and concluded that no additional site characterization is necessary.

After implementation of the RPP, BNI intends to conduct an initial site survey in an effort to identify any environmentally transported legacy contamination. The survey will concentrate in high probability areas such as along the site boundary facing the Tank Farms and areas identified in HNF-2067 that contain slightly elevated background levels. All minor (can be remediated in less than eight hours) amounts of radioactive material will be collected, packaged, and properly stored for DOE disposition. If significant amounts (requires more than eight hours to remediate) of radioactive material are discovered, the area will be posted, work activities in that area will be stopped, and DOE will be notified.

After completion of the initial survey, periodic confirmatory surveys will be performed. The survey frequency will be determined by the amount of radioactivity detected, with a target period of quarterly. This survey frequency will be augmented by surveying after sustained high winds and surveying the spoil piles after extensive excavation.

Verification of radiation exposure will be performed by establishing an area dosimetry program between the potential source of radiation (Tank Farms) and the WTP construction site.

Radiological surveys were performed by Fluor Hanford during the execution of project W519. The excavations performed for this work did not identify any contaminated soil and only non-contaminated soil was used for the excavation back fills. The only radioactivity detected was from deep rooted vegetation growing over a failed transfer line. This location is not on the WTP construction site and Fluor Hanford removed the contaminated vegetation and treated the area with herbicide to prevent future growth. Note: The radiological information from the W519 project was provided verbally by Fluor Hanford radiological control. Fluor Hanford is not obligated to submit to an assessment request from BNI or recover and produce records for a contractor of which they are not under contract.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-021-Q** | **Date Opened: 06/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: J. Polehn** |

**Description:**

*Review Guidance:* Section 3.2.3.3.1, Regulatory Acceptance Criteria, of the review guidance requires BNI to develop and commit to a suitable standard for incident reporting and investigation for limited construction that is consistent with the requirements of Section 3.2.3.2.

Section 3.2.3.2, Regulatory and Contractual Requirements, of the review guidance states, "Additional relevant requirements are included in the SRD, Section 7.7, "Reporting and Incident Investigation," specifically SRD Safety Criterion 7.7-1 through 7.7-9. The description of BNI's incident reporting and investigation standard and implementing program should reflect implementation of the SRD criteria in a manner appropriately tailored to the limited construction phase."

*LCAR Reference:* Attachment 5, LCAR-Review Guidance Matrix, identifies that the elements of the LCAR Review Guidance for Incident investigations are addressed in LCAR Section 5. Section 5 states, "Radioactive materials will not be required to perform limited construction." That section also states, "…incident investigation requirements contained in SRD Safety Criteria 7.7-1, 7.7-2, and 7.7-3 are not applicable to limited construction activities. Incident investigation procedures will be developed consistent with DOE Manual 232.1-1A, Section 5.5, for use during limited construction activities."

*Question:* During the OSR/BNI meeting of June 12, 2001, BNI indicated that there was the potential to utilize radiographic sources (i.e., radioactive materials) during limited construction activities. Since major accidents (e.g., death, over-exposures, etc.) can occur involving use of radiographic sources, what will be the Notification, Categorization and Consequence Assessment process for an incident investigation with radioactive materials (e.g., radiographic sources) used during limited construction and why does SRD SC 7.7-1 through 3 not apply to limited construction activities?

**Contractor Response:**

Radiation exposure incidents are included in the occurrence reporting procedure described in response to question 01-LCAR-001-Q.

The statement in the LCAR relative to no radioactive materials onsite during limited construction was in reference to radioactive materials that could result in the occurrence of a "major accident" as defined in ISMP Section 12 and 29 CFR 1910.119(m).

The reason that SRD Safety Criteria 7.7-1 through 3 are not applicable during limited construction is as stated in LCAR Section 5:

> "As described in SRD Safety Criterion 7.7-1 and DOE/RL-96-0006 incidents that result in or could reasonably have resulted in a major accident shall be investigated. Per the definitions in Section 12 of the ISMP, relative to implementation of the investigation and reporting requirements of 29 CFR 1910.119(m), a major accident is a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemicals or radioactive materials, that presents serious danger to facility worker.
>
> During limited construction, highly hazardous chemicals described above will not be utilized and there is no reason to believe that significant amounts of hazardous chemicals were improperly disposed of on the construction site. Radioactive materials will not be required to perform limited construction. The anticipated low level legacy contamination that may be encountered during construction will be controlled as described in Section 4.1. The radiation protection program establishes a site monitoring and control process that identifies and controls radioactive contamination to a level several thousand times below the level necessary to present a serious danger to facility workers. As such, incident investigation requirements contained in SRD Safety Criteria 7.7-1, 7.7-2, and 7.7-3 are not applicable to limited construction activities. Incident investigation procedures will be developed consistent with DOE Manual 232.1-1A, Section 5.5, for use during limited construction activities."

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-022-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: K. Scown** |

**Description:**

*Review Guidance:* Section 2.3.3.4 Regulatory Acceptance Criteria, requires "The excavation of the fire protection system that may be installed during LCA, including sufficient information to ensure that the installed underground portions of the system will meet seismic requirements, as well as the system performance requirements related to the excavation, if any. The submittal should include objective evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* 1.3.2.1.1 Fire Water (Activities 0009, 0010, and 0024), paragraph 2 states "The portions of the main fire protection yard loop being installed during limited construction will provide the water source for permanent facility sprinkler systems and hose stations. These lines will be 12 inch PVC piping. The system is sized to provide sprinkler coverage to the most demanding sprinkler system (assumed to be 0.2 gpm/$ft^2$ for 3000 $ft^2$), plus 500 gpm for hose streams, at the most remote location. A hydraulic analysis will be prepared by a qualified fire protection engineer, based on the requirements of UBC and NFPA 24. As the fire protection system evolves, the size of individual sprinkler systems will be limited to ensure the capacity of the supply system is not exceeded."

*Question:* When will the fire water system plans, as described in NFPA 24-95 Section 1-4, be submitted for approval by the Authority Having Jurisdiction (AHJ)?

*Question:* Drawings in the previous LCAR submittal indicated the fire water supply main would be 14 inches. What is the basis for the 12-inch pipe size?

*Question:* What is the flow required for the most demanding sprinkler system?

*Question:* What is the bases for the assumption of 0.2 gpm/$ft^2$ for 3000 $ft^2$?

*Question:* What is meant by "…sprinkler systems will be limited to ensure the capacity of the supply system is not exceeded."?

**Contractor Response:**

1) The underground fire water piping drawings will be provided for AHJ review prior to installation. The exact date is not known at this time.

2) The 12 inch size was selected after the decision was made to change piping materials. The 12 inch PVC piping now being used actually has better hydraulic characteristics than the 14 inch HDPE piping originally identified.

3) The most demanding system has not been identified at this time. It is expected that the deluge system located in the cooling tower will be the most demanding, but this can not be verified at this time since the design for the cooling tower is not done nor has the materials of construction been confirmed.

4) This assumption is based on sprinkler systems designed to extinguish ordinary hazard type fires, which is the highest anticipated hazard in the process buildings. The largest anticipated area of the facility requiring sprinklers to be activated to contain a fire is 3,000 square feet. Additionally, it is assumed that the fire department is flowing 500 gpm hose streams while the sprinklers are activated. This provides reasonable capacity for the system without being overly conservative.

5) This means that the sprinkler system designs will be governed by the available pressures in the water supplies. The contractor will design each system to operate within the design parameters, sizing the pipes accordingly.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-023-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: K. Scown** |

**Description:**

*Review Guidance:* Section 2.3.3.4 Regulatory Acceptance Criteria, requires "The excavation of the fire protection system that may be installed during LCA, including sufficient information to ensure that the installed underground portions of the system will meet seismic requirements, as well as the system performance requirements related to the excavation, if any. The submittal should include objective evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* 1.3.2.1.1 Fire Water (Activities 0009, 0010, and 0024), paragraph 4, states SRD Safety Criterion 4.5-13 implementing standards are DOE-STD-1066,…DOE G-440.1,… and NFPA 801,…"

*Question:* What is the revision/code of record of the standards/documents that will be utilized?

**Contractor Response:** DOE-STD-1066-97, NFPA 801, 1995 edition, and DOE G-440.1, September 30, 1995 revision will be utilized. The revision/code of record for these documents is included in SRD SC 4.5-13 for DOE-STD-1066 and NFPA 801. SRD Appendix C, Chapter 4.0 specifies the revision of DOE G440.1.

NFPA 24 1995 Edition will be utilized.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-024-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: K. Scown** |

**Description:**

*Review Guidance:* Section 2.3.3.4 Regulatory Acceptance Criteria, requires "The excavation of the fire protection system that may be installed during LCA, including sufficient information to ensure that the installed underground portions of the system will meet seismic requirements, as well as the system performance requirements related to the excavation, if any. The submittal should include objective evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding SRD requirements.

*LCAR Reference:* 1.3.2.1.1 Fire Water (Activities 0009, 0010, and 0024), paragraph 3 states "The permanent portions of the fire water system installed during limited construction will be in accordance with SRD 4.5-13."

*Question:* NFPA 801-98, Section 4-4 Supply Mains and Hydrants, 4-4.2 requires "Each hydrant shall be equipped with a separate shutoff valve located on the branch connection to the supply main." A review of the drawings submitted with the LCAR and those identified as Issue for Bid (IFB) did not indicate there would be individual shutoff valves. Will hydrant isolation valves be provided as required by NFPA 801-98?

**Contractor Response:** NFPA 801-98 does not apply to this contract (see response to question 01-LCAR-023), however it is already in our plan to install the referenced isolation valves. The details of the hydrants and associated valves are shown on drawing DWG-24590 BF-C00010 included in this transmittal letter.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-025-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: J. Yedidia** |

**Description:**

*Review Guidance:* Item 4 of Section E-1.3.3, Regulatory Acceptance Criteria, requires that there be sufficient basis for identifying and classifying any important-to-safety SSCs to be installed during limited construction.

*LCAR Reference:* Section 1.3.1.4, Pre-Assembly of Stainless Steel Liners, of the LCAR states "Based on ISM assessments performed to date, ---- confinement of spilled liquid as a means to reduce operating risk ---- is provided by the concrete structure itself and does not require liners. The ISM process has not identified any potential accidents that could result in damage to the structure extensive enough to negate the confinement function of the concrete structure. Therefore, the stainless steel liners are not designated as ITS."

*Question:* What is meant by "ISM assessments performed to date," when it is used in the LCAR? For example, what analysis including assumptions has been performed to ensure that the concrete structure, by itself, will be able to provide the confinement function against any potential spill of liquid inside the cell?

**Contractor Response:** It has been determined that pre-assembly of stainless steel liners during limited construction is not required. The LCAR will be updated to remove this activity. The determination that portions of the permanent fire water, potable water, and compressed air systems to be installed under the LCAR are not ITS are also based partially on "ISM assessments performed to date". The subject statement is intended to convey that these LCAR installations are not associated with any control strategies identified during ISM assessments performed up to the LCAR submittal date. Details on the progress of the ISM process were presented at the June 26, 2001 Topical Meeting.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-026-Q** | **Date Opened: 6/14/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: J. Yedidia** |

**Description:**

*Review Guidance:* Section D, item 12 of the review guidance requires a list of material types and approximate quantities that will be stored on the site and in the lay-down areas during limited construction activities, including receipt and inspection procedures for ITS SSC materials.

*LCAR Reference:* Not found

*Question:* What ITS materials will be procured and stored on the site during limited construction?

**Contractor Response:** The LCAR sections that address review guidance Section D, item 12 was inadvertently omitted from the review guidance matrix provided as attachment 5 to the LCAR transmittal letter. LCAR Sections 1.3.2.7 and 1.3.3.6 include information that is intended to address review guidance Section D, item 12.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-027-Q** | **Date Opened: 6/19/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: N. Hunemuller** |

**Description:**

*Review Guidance:* Section E.5.3.3 states, "BNI's described experience qualifications for performing limited construction work activities ensure that the activities can be performed effectively and safely."

*LCAR Reference*: Section 7.1 provides a list of six locations at which "Bechtel is or has recently provided construction and field services to support the DOE mission of Waste Cleanup with substantial experience in the areas of radiological safety, radiation protection, environmental radiation protection, Quality Assurance, and management controls."

*Question*: What specific "construction and field services" performed at the listed locations provided "substantial experience" relevant to the LCAR?

**Contractor Response:**

**Oak Ridge-Bechtel Jacobs Role**

- Overall guidance and integration of cleanup programs at the uranium enrichment facilities at Oak Ridge, Paducah, and Portsmouth
- Safe and environmentally compliant storage of uranium hexafluoride cylinders at the East Tennessee Technology Park, Paducah, and Portsmouth
- Environmental investigation and cleanup at hundreds of sites, ranging from remediation of reactor basins to deactivation of high-ranking facilities and stabilization of nuclear material Storage, consolidation, characterization, and ultimate disposal of all legacy waste and any newly generated waste
- All 29 activities were essentially completed on schedule and below cost.

**Bechtel Hanford**

- Decontamination and decommissioning of former weapons material production facilities
- Interim safe storage of nuclear reactors, where hazardous materials, equipment, and outer structures are removed and the reactor core is sealed within its shield walls to allow safe radioactive decay over several decades
- Cleanout of spent nuclear fuel storage basins
- Remediation of massive contaminated soil sites and disposal of excavated wastes, including design, construction, and operation of a 4-million-ton disposal facility
- Permitting, environmental compliance, groundwater remediation, waste management, and surveillance and maintenance of retired facilities and sites

**Savanannah River Site**

- Design and construction of four facilities for tritium handling and processing, upgrades to a high-level waste tank farm, and restart of the F-canyon, FB-line, and HB-line
- Evaluation of technologies for treating spent nuclear fuels; technologies include co-disposal, melt and dilute, press and dilute, electromet-allurgy, glass material oxidation dissolution, and plasma arc melting
- Environmental restoration, including managing, integrating, and remediating over 300 waste sites and groundwater cleanup units
- Planning, design, and construction of facilities for the storage, disassembly, and conversion of excess plutonium for ultimate disposition by reactor burning or immobilization
- Five times our construction department completed over 2.5 million job-hours without a lost-time accident.

**Nevada Test Site**

- Stockpile stewardship, nuclear waste management, and crisis and consequence management for nuclear emergencies
- Development of new environmental technologies and emergency response capabilities
- Counter-terrorism technology development, training, and intelligence to detect activities leading to illegal weapons of mass destruction

**Energys Formerly Utilized Remedial Action Program (FUSRAP)**
We were responsible for site characterization, stabilization, remediation, and restoration at 46 facilities nationwide, including six high-priority Superfund sites, and over 300 vicinity properties in both residential and industrial areas. Site soils, surface water, groundwater, sediments, or sludge were contaminated with heavy metals, dioxin, cyanide, acids, PCBs, volatile organics, asbestos, or petroleum hydrocarbons, as well as uranium, radium, or thorium.

**Idaho National Engineering Laboratory**

- Expanding INEEL's scientific capabilities in areas such as subsurface geoscience
- Managing environmental restoration at INEEL in a safe, legally compliant manner, especially the cleanup of buried nuclear waste
- Continuing core research in nuclear reactor science and technology to develop the next generation of reactors, which are safer, more economical, and proliferation-resistant and produce less waste
- Developing new science and technology for alternative energy and energy efficiency, such as biomass derived fuels
- Sensing and diagnostics for safety and industrial processes

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-028-Q** | **Date Opened: 6/19/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: N. Kaushal** |

**Description:**

*Review Guidance:* Section D, "Information Required in the LCAR," states in part "BNI should provide a complete description of LCAR activities for which authorization is requested. This description should include the following:"

Item 2 under section D states: "Temporary facilities and services installed under the LCA …"

Item 3 under section D states "Permanent facilities and services installed under the LCA …"

*LCAR Reference:* Activity number 11 in Table 1 is described as "Excavation for other U/G utilities – raw water, potable water, permanent power, site drainage, compressed air, cathodic protection, **etc**." (emphasis added).

*Question:* What U/G utilities and excavations, other than those explicitly included in the list above, are included in the LCAR scope?

**Contractor Response:** There are no U/G utilities and excavations included in the LCAR that are not explicitly included in LCAR Table 1. The use of "etc." in activity number 11 will be removed from the LCAR.

| **Office of Safety Regulation of the River Protection Project Waste Treatment (RPP-WTP) Contractor** | **OSR Review Team Preliminary Questions for BNI** |
|---|---|
| **Question #: 01-LCAR-029-Q** | **Date Opened: 6/19/01** |
| **Place "X" if answering "yes":** | **Date to Contractor: 6/19/01** |
| Protection Information? ___ | **Date of Response:** |
| Proprietary Information? ___ | **Date Closed:** |
| Team Accepted? _X_ | **Reviewer: L. Miller/J. Polehn** |

**Description:**

*Review Guidance:* Section D, Information Required in the LCAR, item 5 states, "BNI should provide a complete description of all LCAR activities for which authorization is requested. This description should include the following: 5. Engineering and design criteria (including SRD safety criteria) applied to excavations for permanent facilities)…and the basis for selection…"

*LCAR Reference:* Section 1.3.2.2, Fencing states, "Permanent and temporary fencing will be installed. The permanent fence will be a standard industrial fence per the Safeguard and Security Plan requirements. The fence is to provide protection against damage, destruction, or theft of property….The fencing is therefore not designated as ITS."

*Question:* With regard to the fencing and its location, how will BNI integrate the fencing and its location into the design criteria to distinguish between the worker and the co-located worker to assure the WTP meets the SRD SC 2.0-1 Radiological Dose Standards?

**Contractor Response:**

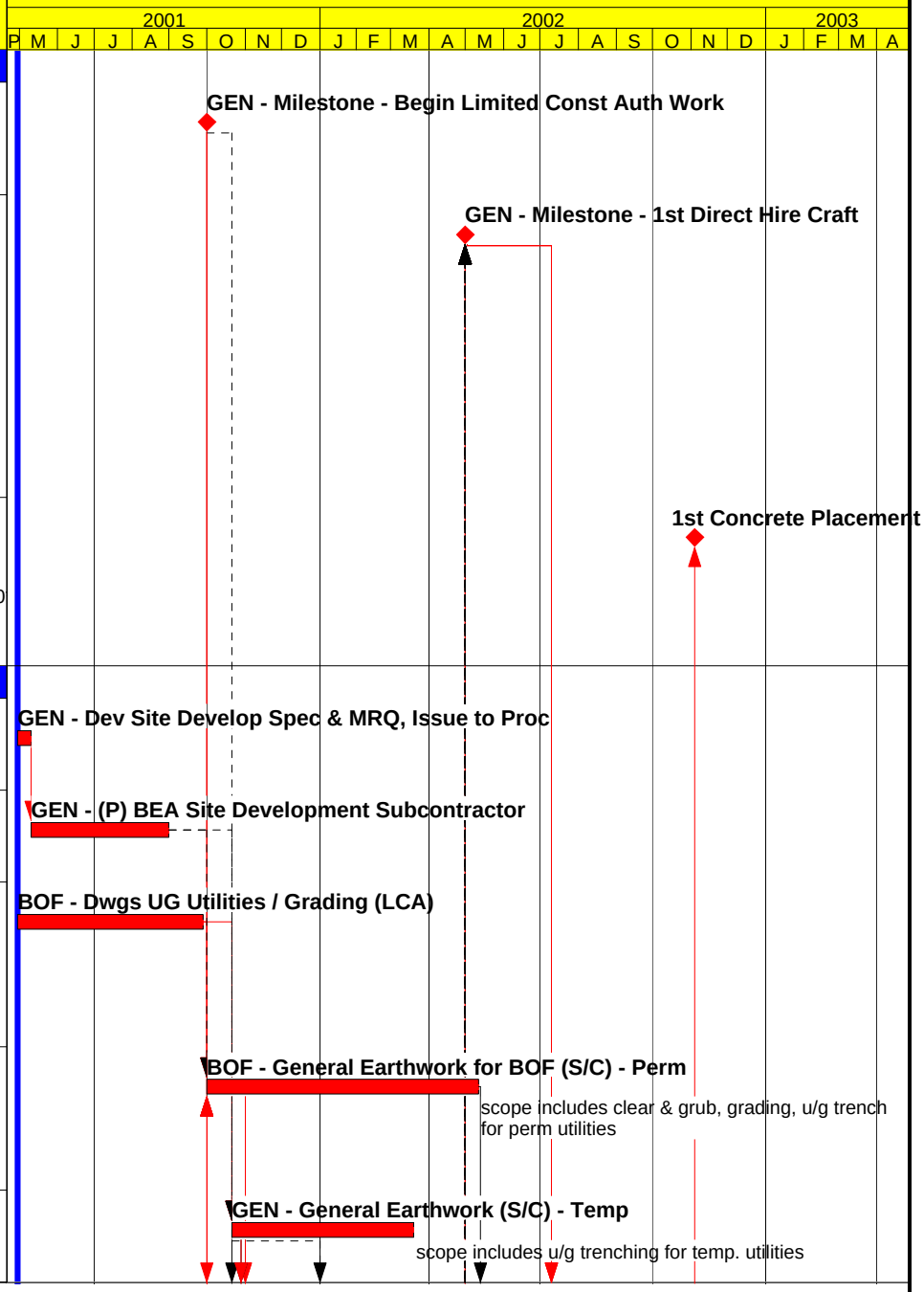
The location of the facility fence is not a limiting factor from the standpoint of the accident analyses for the following reason:

Accident analyses, both for Severity Level determination and for DBE analysis, base their conclusions on potential exposures to hypothetical receptors at "limiting" locations. These assumed locations are "limiting" in the sense that the calculated maximum exposure to a receptor at that location has a very high probability of exceeding exposure at all other potential locations of the population to which the receptor belongs.

The limiting facility worker is generally assumed to be located as near the location of the event (i. e., release) as is reasonable in the context of the development of the event. (See K70DG715, Section 2.1). His population group is defined as being within the WTP controlled area (i. e., the fence), but the actual location of the fence is irrelevant to establishing the definition of "limiting" with respect to the facility worker location. Likewise, his belonging to the population group defined as "facility workers" influences the type of controls used for his protection, but again the actual fence location is not important.

The co-located worker population is defined as being outside the WTP controlled area boundary and within the boundary established for potential public occupation. The limiting co-located worker location (from the standpoint of ground level releases) is defined as being a minimum of 100 meters from the release in the compas direction of the highest calculated dispersion coefficient (calculated using assumptions set forth in RegGuide 1.145). This definition does not depend on fence location. It is true that there may be "co-located worker" locations nearer than 100 meters to the facility, depending on the location of the fence. However, the 100 meter minimum is a calculational restriction of the dispersion equations, is generally used in the DOE complex for establishing maximum potential exposure to co-located workers from accidental releases, and has been accepted by the OSR during their review of our radiological consequence methodology document (now K70DG715).

| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| **0000 Milestones** | | | | | | |
| 4DG0000040 | 01OCT01* | | 0 | 0 | | 4DB11039*, 4DG5100065, 4DG5312F00*, 4DG5312G00*, 4DG5312G10*, 4DG541V00*, 4DG541Z00* |
| 4DG0000025 | 01MAY02* | | 0 | 0 | 4DB14024, 4DB15002*, 4DB15057, 4DB16001, 4DB28045, 4DB5110, 4DBZZ00015, 4DG5100070, 4DG5100075, 4DG5100100, 4DG5100150, 4DG5100155, 4DG5100160, 4DG5100305*, 4DG5100307, 4DG5312A00, 4DG5312B00, 4DG5312X00, 4DG5400002, 4DG5400005, 4DG5400010+ | 4DG5110*, 4DG5210*, 4DG5220*, 4DG5230*, 4DG5240*, 4DG5250*, 4DG5260*, 4DG5270*, 4DG5275*, 4DG541X00*, 4DH12130*, 4DL121B000*, 4DP12110* |
| 4DH000A010 | 04NOV02 | | 0 | 42 | 4DH12135* | 4DH12150*, 4DH14Z001*, 4DH15390*, 4DH17107, 4DH21Z001*, 4DH24Z001*, 4DH25Z001*, 4DH31Z001B*, 4DH5110*, 4DH5210*, 4DH5220 |
| **0001 Site Grading/Survey Control - Clear & Grub** | | | | | | |
| 4DG1100055 | 30APR01 | 09MAY01 | 8 | 19 | 4DG0000001* | 4FG1100060* |
| 4FG1100060 | 10MAY01 | 31AUG01 | 80 | 19 | 4DG1100055* | 4DB11039, 4DG5100065 |
| 3EB11SI010 | 30APR01* | 28SEP01 | 107 | 0 | 1AG0000001* | 3EB-L2-ENA*, 3EB10P1190, 3EB11SI030, 3EB11SI040*, 3EB11SI050, 3EB11SI060, 3EB11SI070*, 3EB11SI080*, 3EB17A1000*, 4DB11039*, 4DG5100065* |
| 4DB11039 | 01OCT01 | 10MAY02 | 154 | 0 | 3EB11SI010*, 3EB11SI020*, 4DB0000006*, 4DBZZ00001, 4DG0000040*, 4DG5200030*, 4DG5200035*, 4DG5200320*, 4FG1100060 | 4DB11040*, 4DB5110*, 4DB5210*, 4DG-L2-336*, 4DG5100065*, 4DH11100*, 4DX11765* |
| 4DG5100065 | 22OCT01 | 19MAR02 | 101 | 0 | 3EB11SI010*, 3EB11SI020, 4DB11039*, 4DG0000040, 4FG1100060 | 4DG1200215, 4DG5100070*, 4DG5100075*, 4DG5100076* |




Start Date 11DEC00
Finish Date 31JUL11
Data Date 30APR01
Run Date 02JUL01 11:58

Early Bar
Progress Bar
Critical Activity



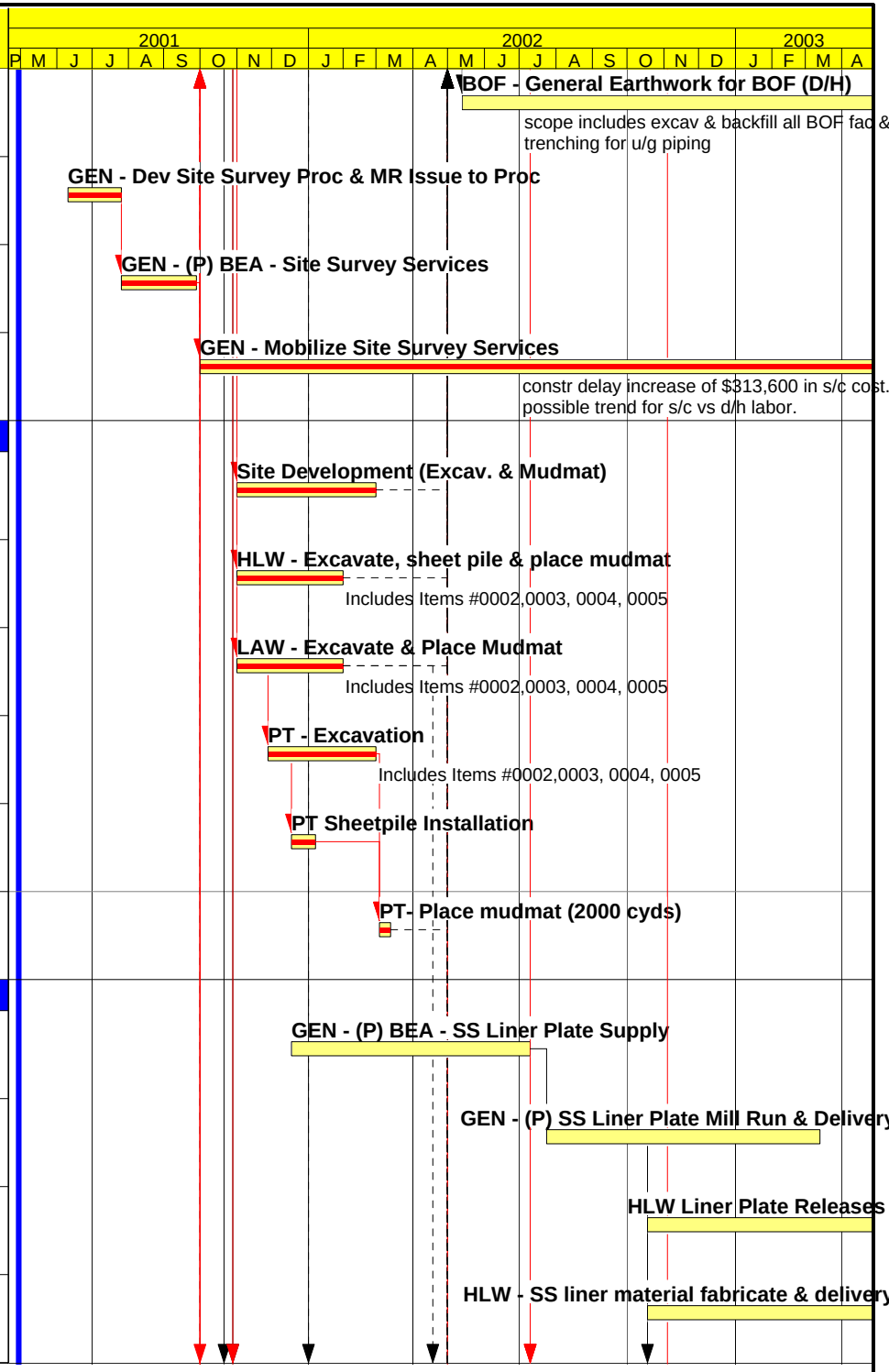
RPP WTP

**Level III Baseline**

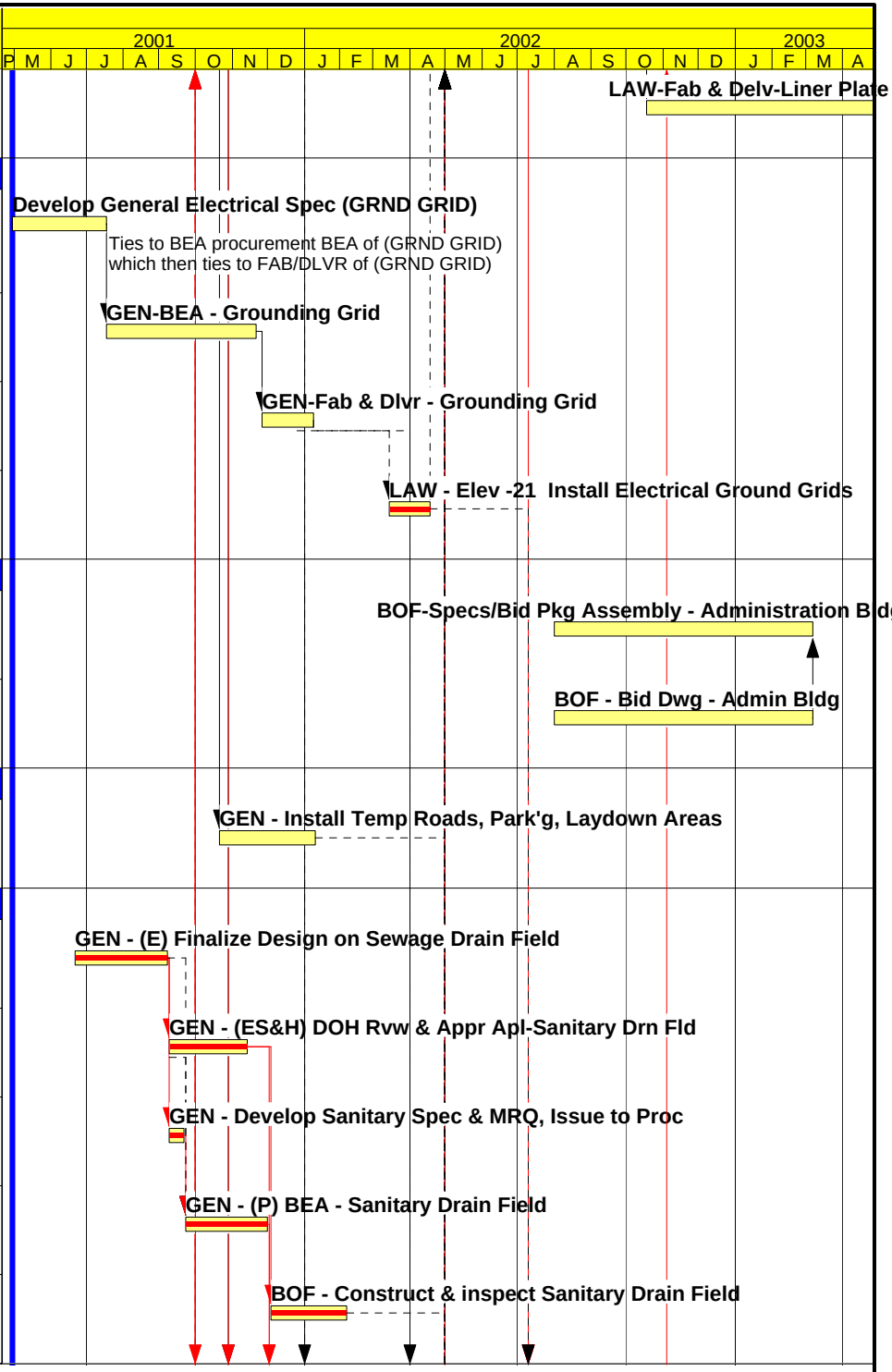
**LCAR Activities**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

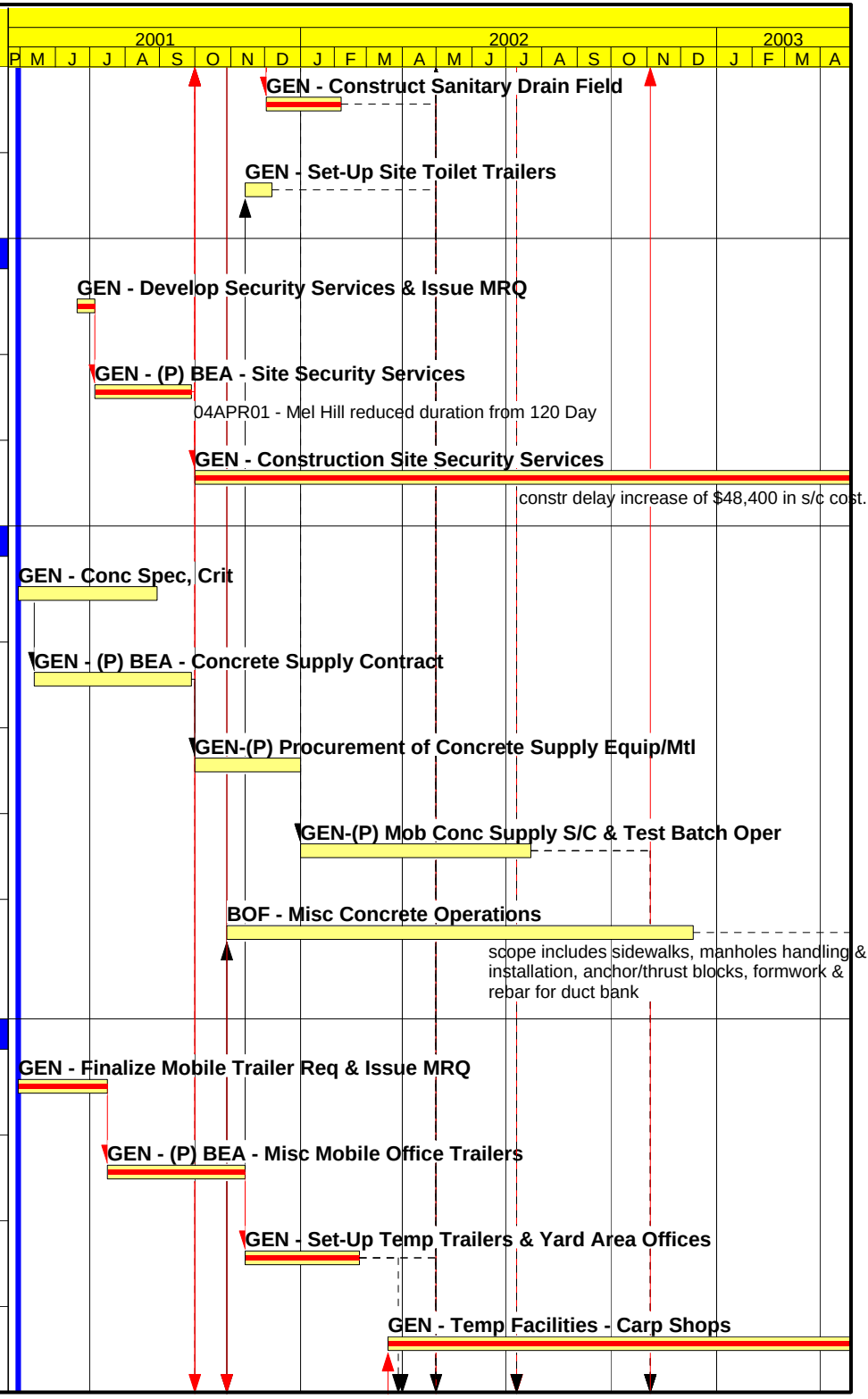
| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DB11040 | 13MAY02 | 13JUN05 | 623 | 186 | 4DB11039* | 4DB11035* |
| 4DG5200020 | 11JUN01 | 25JUL01 | 32 | 1 | 4DG0000001* | 4FG5200025* |
| 4FG5200025 | 26JUL01 | 27SEP01 | 45 | 1 | 4DG5200020* | 4DG5200030* |
| 4DG5200030 | 01OCT01 | 20JUL06 | 970 | 0 | 4FG5200025* | 4DB11039*, 4DH000A999 |
| **0003 PT/LPP/HLW/LAW Main Foundation Excavation** | | | | | | |
| 4DX11765 | 01NOV01 | 28FEB02 | 65 | 28 | 4DB11039* | 4DG0000025 |
| 4DH11100 | 01NOV01 | 31JAN02 | 50 | 28 | 4DB11039* | 4DG0000025, 4DH000A000*, 4DL111B000* |
| 4DL111B000 | 01NOV01 | 31JAN02 | 50 | 28 | 4DH11100*, 7KGE23B300 | 4DG0000025, 4DL000A000*, 4DL163A100, 4DL163A200, 4DP11100* |
| 4DP11100 | 29NOV01 | 28FEB02 | 50 | 28 | 4DL111B000*, 4DP00623, 7KGE23B205 | 4DP11536*, 4DP12130, 4DP12538*, 4DP16535 |
| 4DP11536 | 18DEC01 | 07JAN02 | 10 | 28 | 4DP11100* | 4DP12538* |
| 4DP12538 | 04MAR02 | 12MAR02 | 6 | 28 | 4DP11100*, 4DP11536* | 4DG0000025, 4DP16535* |
| **0006 Pre-Assembly SST Liner** | | | | | | |
| 4FG1300170 | 18DEC01 | 09JUL02 | 140 | 124 | 3EG13CS010* | 4FG1300175* |
| 4FG1300175 | 24JUL02 | 12MAR03 | 159 | 124 | 4FG1300170* | 4DG1300180*, 4FH13140*, 4FL1302185* |
| 4FH13140 | 17OCT02 | 29DEC03 | 300 | 321 | 3EH13CS040, 4FG1300175* | 4DH13130*, 4DH13130 |
| 4DH13130 | 17OCT02 | 13APR04 | 300 | 258 | 4FH13140*, 4FH13140 | 4DH13125* |



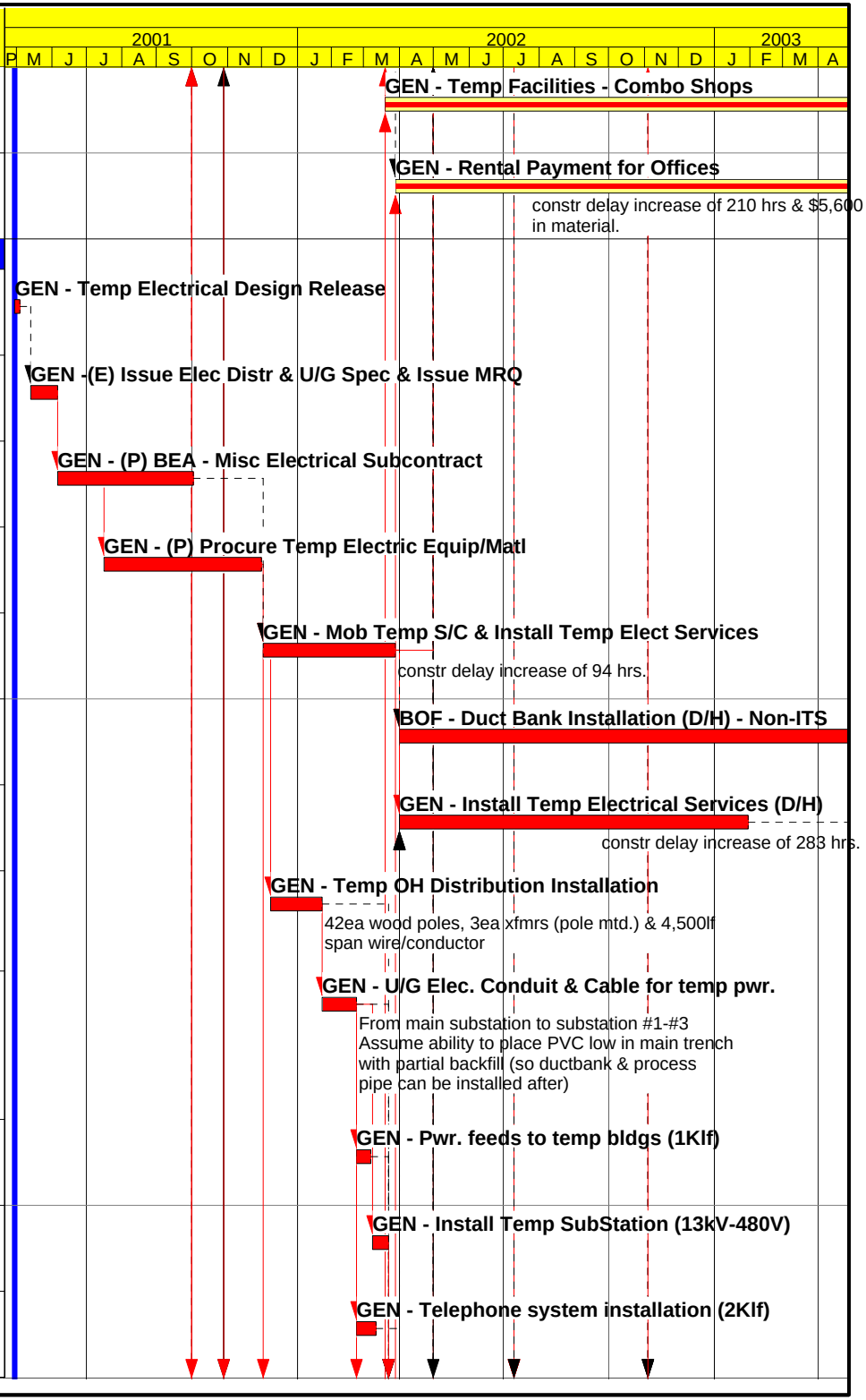
| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4FL1302185 | 17OCT02 | 06JUN03 | 160 | 124 | 3EL12CS020, 3EL13CS010, 4FG1300175* | 4DL121K000, 4DL131K000 |
| **0007 Electrical Grounding** | | | | | | |
| 3EG16L0515 | 30APR01 | 17JUL01 | 55 | 70 | 3EG0000001* | 4FG1602130*, 4FG1690170* |
| 4FG1602130 | 18JUL01 | 21NOV01 | 90 | 70 | 3EG16L0515* | 4FG1602135* |
| 4FG1602135 | 26NOV01 | 09JAN02 | 30 | 70 | 4FG1602130* | 4DB16001, 4DL163A100, 4DP16535 |
| 4DL163A100 | 14MAR02 | 17APR02 | 20 | 44 | 4DL111B000, 4DL163A350*, 4FG1602135 | 4DL121B000, 4DL163A200 |
| **0014 Admin Bldg** | | | | | | |
| 3EB14AR010 | 01AUG02 | 07MAR03 | 150 | 251 | 3EB14AR170* | 3EB10AR500*, 3EB10CS500*, 4FB14B0110* |
| 3EB14AR170 | 01AUG02* | 07MAR03 | 150 | 251 | 3EB0000001 | 3EB10P1132*, 3EB14AR010*, 3EB16B1000*, 3EB17B1000* |
| **0016 Site Road Construction** | | | | | | |
| 4DG5100070 | 22OCT01 | 10JAN02 | 54 | 77 | 4DG5100065* | 4DG0000025 |
| **0017 Temp Sanitary Facilities** | | | | | | |
| 4DG11SI050 | 22JUN01 | 07SEP01 | 54 | 38 | 4DG0000001* | 4DG5100085*, 4DG5100090*, 4FG5100095 |
| 4DG5100085 | 10SEP01 | 13NOV01 | 47 | 38 | 4DG11SI050* | 4DB15057*, 4DG5100100*, 4FG5100095 |
| 4DG5100090 | 10SEP01 | 21SEP01 | 10 | 38 | 4DG11SI050* | 4FG5100095* |
| 4FG5100095 | 24SEP01 | 30NOV01 | 48 | 38 | 4DG11SI050, 4DG5100085, 4DG5100090* | 4DG5100100* |
| 4DB15057 | 04DEC01 | 06FEB02 | 44 | 38 | 4DG5100085* | 4DG0000025 |



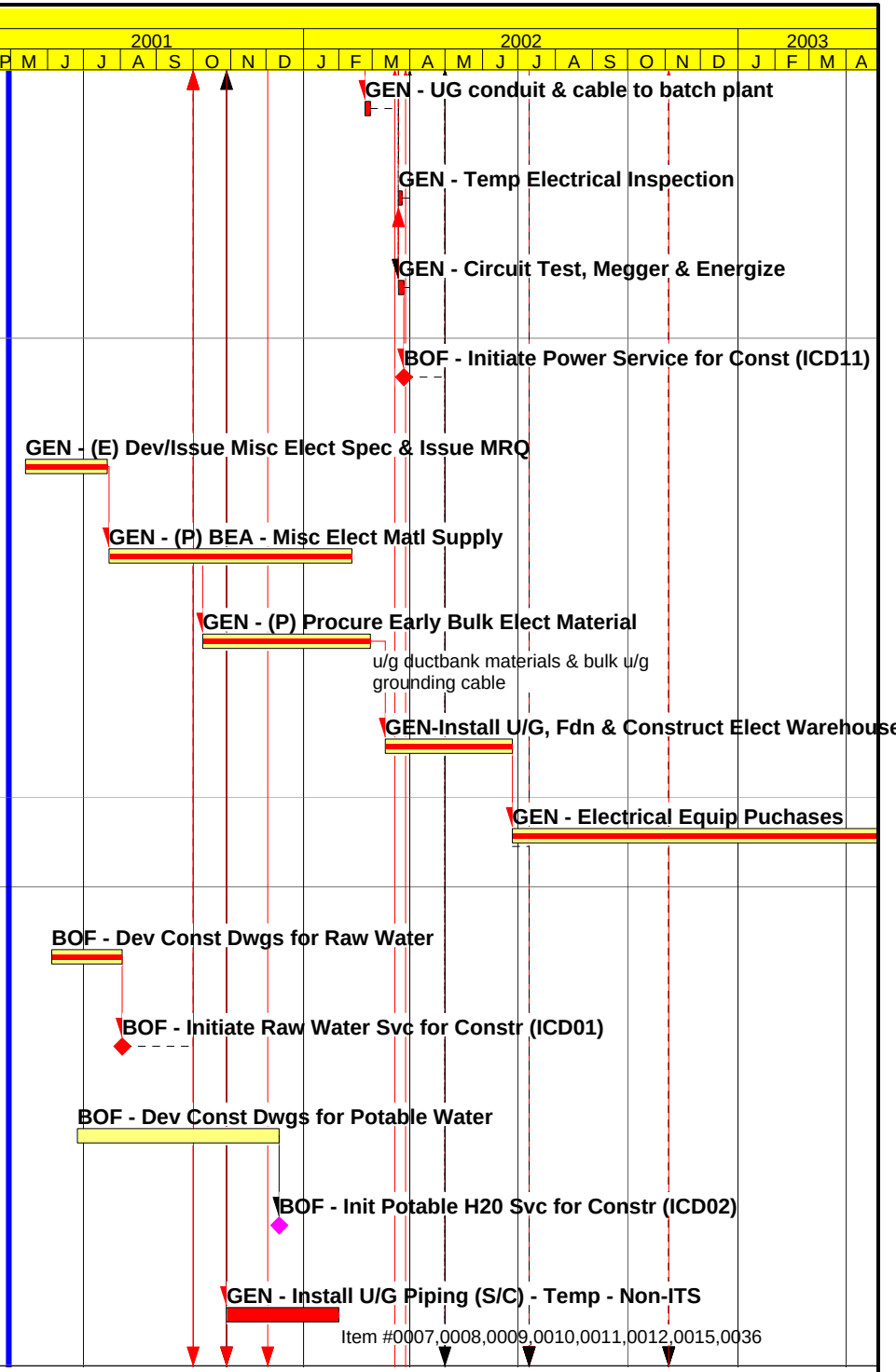
| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DG5100100 | 03DEC01 | 06FEB02 | 45 | 38 | 4DG5100085*, 4FG5100095* | 4DG0000025 |
| 4DG5100150 | 14NOV01 | 07DEC01 | 16 | 98 | 4FG5100145* | 4DG0000025 |
| **0019 Site Security** | | | | | | |
| 4DG5100310 | 21JUN01 | 05JUL01 | 10 | 0 | 4DG0000001* | 4FG5100315* |
| 4FG5100315 | 06JUL01 | 28SEP01 | 60 | 0 | 4DG5100310* | 4DG5200320* |
| 4DG5200320 | 01OCT01 | 20JUL06 | 970 | 0 | 4FG5100315* | 4DB11039*, 4DH000A999 |
| **0020 Concrete Batch Plant** | | | | | | |
| 3EG12CS010 | 30APR01 | 29AUG01 | 86 | 73 | 3EB0000001* | 4FG1200205*, 4FG1200225*, 4FG1200235*, 4FG1200245*, 4FG1200255*, 4FG1200275* |
| 4FG1200205 | 14MAY01 | 28SEP01 | 97 | 73 | 3EG12CS010* | 4FG1200210* |
| 4FG1200210 | 01OCT01 | 31DEC01 | 62 | 73 | 4FG1200205* | 4DG1200215* |
| 4DG1200215 | 02JAN02 | 22JUL02 | 141 | 73 | 4DG5100065, 4FG1200210* | 4DH12135, 4DL121B100, 4DP12190 |
| 4DB12005 | 29OCT01 | 11DEC02 | 227 | 148 | 4DB15002* | 4DB16001 |
| **0021 Temporary Site Offices** | | | | | | |
| 4DG5100140 | 30APR01 | 16JUL01 | 54 | 27 | 4DG0000001* | 4FG5100145* |
| 4FG5100145 | 17JUL01 | 13NOV01 | 85 | 27 | 4DG5100140* | 4DG5100150*, 4DG5100155* |
| 4DG5100155 | 14NOV01 | 22FEB02 | 67 | 27 | 4FG5100145* | 4DG0000025, 4DG5100160, 4DG5100170 |
| 4DG5312A00 | 19MAR02 | 04NOV04 | 534 | 25 | 4DG5100125* | 4DG0000025, 4DH000A999, 4DL000E999 |



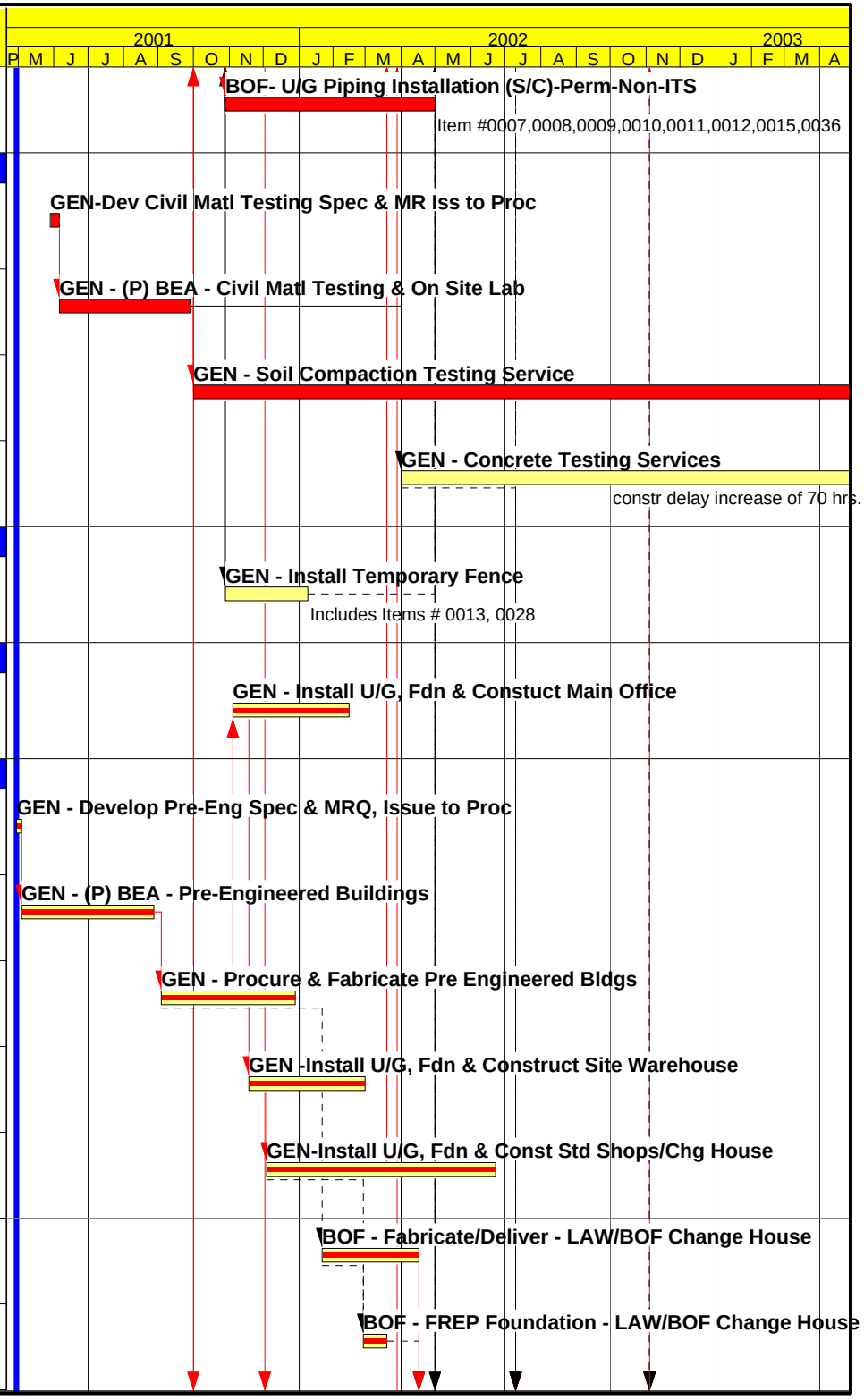
| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DG5312B00 | 19MAR02 | 04NOV04 | 534 | 25 | 4DG5100125* | 4DG0000025, 4DH000A999, 4DL000E999 |
| 4DG5100160 | 28MAR02 | 08JUN06 | 848 | 19 | 4DG0000030, 4DG5100155, 4DG5100326* | 4DG0000025, 4DH000A999 |
| **0023 Construction Power Distribution** | | | | | | |
| 4DG5100315 | 30APR01 | 04MAY01 | 5 | 5 | 4DG0000001* | 4DG5100290 |
| 4DG5100290 | 14MAY01 | 05JUN01 | 16 | 0 | 4DG0000001*, 4DG5100315 | 4FG5100295* |
| 4FG5100295 | 06JUN01 | 02OCT01 | 83 | 0 | 4DG5100290* | 4DG5100300*, 4DG5100305 |
| 4DG5100300 | 17JUL01 | 30NOV01 | 96 | 0 | 4FG5100295* | 4DG5100305* |
| 4DG5100305 | 03DEC01 | 28MAR02 | 80 | 0 | 4DG5100300*, 4FG5100295 | 4DB16001*, 4DB28045*, 4DG0000025*, 4DG5100307*, 4DG5100317* |
| 4DB16001 | 01APR02 | 28OCT04 | 523 | 18 | 4DB12005, 4DG5100305*, 4DG5100307, 4FG1602135 | 4DB14045, 4DG0000025 |
| 4DG5100307 | 01APR02 | 29JAN03 | 169 | 18 | 4DG5100305*, 4DG5100365, 4DG5100385, 4DG5100395 | 4DB16001, 4DG0000025 |
| 4DG5100317 | 10DEC01 | 23JAN02 | 30 | 5 | 4DG5100305* | 4DG5100335*, 4DG5100395 |
| 4DG5100335 | 24JAN02 | 21FEB02 | 20 | 5 | 4DG5100317* | 4DG5100345*, 4DG5100355*, 4DG5100375*, 4DG5100395 |
| 4DG5100345 | 22FEB02 | 05MAR02 | 8 | 17 | 4DG5100335* | 4DG5100365*, 4DG5100395 |
| 4DG5100355 | 08MAR02 | 21MAR02 | 10 | 5 | 4DG5100335* | 4DG5100395* |
| 4DG5100365 | 22FEB02 | 11MAR02 | 12 | 36 | 4DG5100345* | 4DG5100307 |



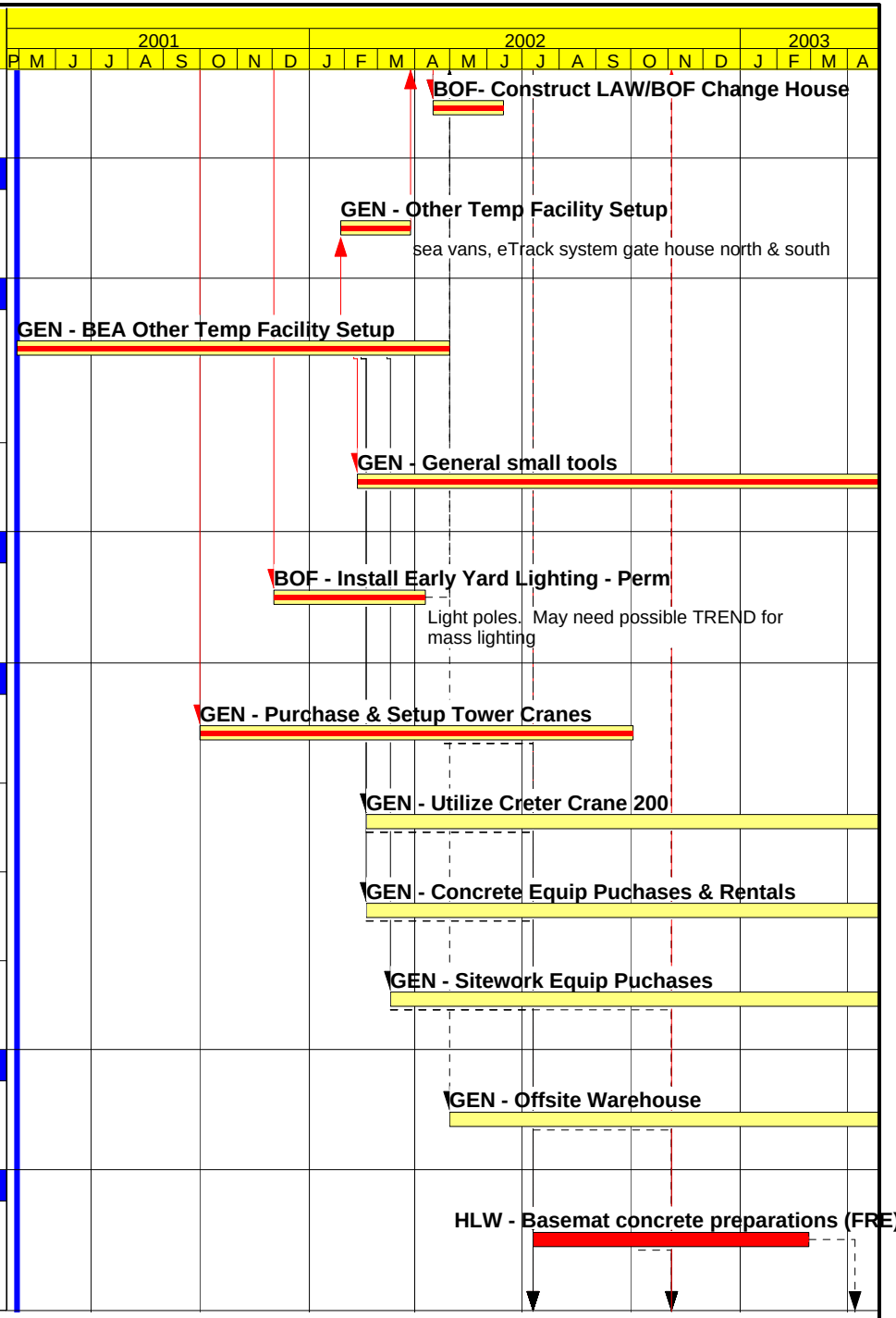
| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DG5100375 | 22FEB02 | 26FEB02 | 3 | 22 | 4DG5100335* | 4DG5100395 |
| 4DG5100385 | 22MAR02 | 25MAR02 | 2 | 26 | 4DG5100395* | 4DG5100307 |
| 4DG5100395 | 22MAR02 | 26MAR02 | 3 | 5 | 4DG5100317, 4DG5100335, 4DG5100345, 4DG5100355*, 4DG5100375 | 4DBZZ00015*, 4DG5100307, 4DG5100385* |
| 4DBZZ00015 | 27MAR02 | | 0 | 5 | 4DG5100395* | 4DG0000025, 5HBC2ICD11 |
| 4DG5100270 | 14MAY01 | 20JUL01 | 48 | 18 | 4DG0000001* | 4FG5100275* |
| 4FG5100275 | 23JUL01 | 11FEB02 | 140 | 18 | 4DG5100270* | 4FG5100280* |
| 4FG5100280 | 09OCT01 | 26FEB02 | 95 | 18 | 4FG5100275* | 4DG5100285* |
| 4DG5100285 | 12MAR02 | 24JUN02 | 74 | 18 | 4FG5100280* | 4DG5312E00* |
| 4DG5312E00 | 25JUN02 | 30NOV05 | 694 | 14 | 4DG5100285* | 4DH000A999, 4DH12130 |
| **0024 Construction Water Distribution** | | | | | | |
| 4DBZZ00050 | 05JUN01 | 02AUG01 | 42 | 40 | 4DG0000001* | 4DBZZ00001* |
| 4DBZZ00001 | 03AUG01 | | 0 | 40 | 4DBZZ00050* | 4DB11039, 5HBC2ICD01 |
| 4DBZZ00055 | 26JUN01 | 11DEC01 | 117 | 96 | 4DG0000001* | 4DBZZ00005* |
| 4DBZZ00005 | 12DEC01 | | 0 | 96 | 4DBZZ00055* | 4DG0000030, 5HBC2CD02 |
| 4DG5100076 | 29OCT01 | 31JAN02 | 64 | 0 | 4DG5100065* | 4DB15001, 4DB15002* |



| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DB15002 | 29OCT01 | 30APR02 | 126 | 0 | 4DG5100076* | 4DB12005*, 4DB15001, 4DG0000025* |
| **0026 Civil Testing Laboratory Facility** | | | | | | |
| 4DG5200040 | 29MAY01 | 06JUN01 | 7 | 0 | 4DG0000001* | 4FG5200045* |
| 4FG5200045 | 07JUN01 | 28SEP01 | 80 | 0 | 4DG5200040* | 4DG5200035*, 4DG5200050* |
| 4DG5200035 | 01OCT01 | 20JUL06 | 970 | 0 | 4FG5200045* | 4DB11039*, 4DH000A999 |
| 4DG5200050 | 01APR02 | 28OCT04 | 523 | 62 | 4FG5200045* | 4DH000A999, 4DH12130 |
| **0028 Construction Fencing** | | | | | | |
| 4DG5100075 | 29OCT01 | 09JAN02 | 48 | 78 | 4DG5100065* | 4DG0000025 |
| **0030 Main Field Office** | | | | | | |
| 4DG5100130 | 05NOV01 | 14FEB02 | 69 | 31 | 4DG5100115* | 4DG0000030*, 4DG5100120*, 4DG5400335* |
| **0031 Pre Engineered Bldgs** | | | | | | |
| 4DG5100105 | 30APR01 | 03MAY01 | 4 | 31 | 4DG0000001* | 4FG5100110* |
| 4FG5100110 | 04MAY01 | 27AUG01 | 80 | 31 | 4DG5100105* | 4DG5100115* |
| 4DG5100115 | 04SEP01 | 28DEC01 | 80 | 31 | 4FG5100110* | 4DB14501, 4DG5100130* |
| 4DG5100120 | 19NOV01 | 28FEB02 | 68 | 31 | 4DG5100130* | 4DG0000035*, 4DG5100125*, 4DG5312J00* |
| 4DG5100125 | 05DEC01 | 21JUN02 | 138 | 31 | 4DG5100120* | 4DB12023, 4DG5100135, 4DG5312A00*, 4DG5312B00* |
| 4DB14501 | 22JAN02 | 16APR02 | 60 | 10 | 3EB10AR640, 3EB10CS640, 3EB10P1147*, 4DG5100115 | 4DB-L2-019*, 4DB12023, 4DB14024* |
| 4DB12023 | 27FEB02 | 19MAR02 | 15 | 30 | 3EB12CS230*, 4DB14501, 4DG5100125 | 4DB14024 |



| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DB14024 | 17APR02 | 13JUN02 | 33 | 8 | 3EB10P1147, 4DB12023, 4DB14501* | 3EB10P1146*, 4DG0000025, 4DG5100127* |
| **0032 Temp Trailers / Entries** | | | | | | |
| 4DG5100326 | 29JAN02 | 27MAR02 | 33 | 19 | 4DG5400327* | 4DG5100160* |
| **0033 Tool Cribs** | | | | | | |
| 4DG5400327 | 30APR01 | 30APR02 | 253 | 24 | 4DG0000001* | 4DG5100326*, 4DG5312C00*, 4DG5312C10*, 4DG5312D00*, 4DG5312D10*, 4DG5312H10*, 4DG5312I00*, 4DG5312X00*, 4DG531Y00*, 4DG531Z00* |
| 4DG5312X00 | 11FEB02 | 20JUL06 | 897 | 45 | 4DG5400327* | 4DG0000025, 4DH000A999 |
| **0034 Area and Security Lighting** | | | | | | |
| 4DB28045 | 03DEC01 | 09APR02 | 88 | 15 | 4DG5100305* | 4DB28050, 4DG0000025 |
| **0035 Construction Heavy Equipment Mobilization** | | | | | | |
| 4DG5312G00 | 01OCT01 | 01OCT02 | 203 | 40 | 4DG0000040* | 4DH12130, 4DL121B000, 4DP12110 |
| 4DG5312C00 | 19FEB02 | 06JAN05 | 583 | 78 | 4DG5400327* | 4DH000A999, 4DH12130, 4DL000E999, 4DL121B000, 4DP12110 |
| 4DG5312C10 | 19FEB02 | 02SEP04 | 515 | 78 | 4DG5400327* | 4DH000A999, 4DH12130, 4DL000E999, 4DL121B000 |
| 4DG5312D10 | 11MAR02 | 31MAY05 | 652 | 67 | 4DG5400327* | 4DH000A999, 4DH12130, 4DL121B000, 4DP12190 |
| **0037 Material Rcpt & Storage** | | | | | | |
| 4DG5100170 | 01MAY02* | 16NOV05 | 717 | 65 | 4DG5100155 | 4DH000A999, 4DP12190 |
| **A100 Start Basemat Construction** | | | | | | |
| 4DH12130 | 10JUL02 | 26FEB03 | 128 | 6 | 4DG0000025*, 4DG5200050, 4DG5312C00, 4DG5312C10, 4DG5312D10, 4DG5312E00, 4DG5312G00, 4DH12140* | 4DH12135, 4DH12135, 4DH16125*, 4DH27125* |



| Act ID | Start | Finish | Dur | Total Float | Pred | Succ |
|---|---|---|---|---|---|---|
| 4DH12135 | 04NOV02* | 07APR03 | 85 | 0 | 1AGMS00000, 3EH12CS050, 3EH14AR070, 4DG1200215, 4DH12130, 4DH12130, 4DH27125, 4FH12130, 4FH12140, 7KGEM00035 | 4DH-L2-001*, 4DH000A010*, 4DH12150*, 4DH13125, 4DH24140, 4DH25310Z* |
| 4DL121B000 | 09JUL02 | 03FEB03 | 116 | 0 | 4DG0000025*, 4DG5312C00, 4DG5312C10, 4DG5312D10, 4DG5312G00, 4DL121A100*, 4DL121A200*, 4DL131A100, 4DL163A100, 4FL1202125, 4FL1202135 | 4DL-L2-102*, 4DL000A100, 4DL121B100, 4DL121B100, 4DL163A200*, 4DL211A000* |
| 4DL121B100 | 04NOV02* | 04MAR03 | 66 | 0 | 1AGMS00000, 3EL14AR040, 4DG1200215, 4DL000A100, 4DL121B000, 4DL121B000, 4DL163A200, 4DL211A000, 4FL3102642, 7KGEM00035 | 4DL121D000* |
| 4DP12110 | 10JUL02 | 26FEB03 | 128 | 1 | 3EP12CS010, 3EP12CS020, 4DG0000025*, 4DG5312C00, 4DG5312G00, 4DP12543, 4DP12554*, 4DP16535 | 4DP12190, 4DP12190 |
| 4DP12190 | 04NOV02* | 27MAR03 | 80 | 0 | 1AGMS00000, 3EP12CS010, 3EP12CS020, 3EP14AR030, 3EP14AR180, 3EP1611305, 4DG1200215, 4DG5100170, 4DG5312D10, 4DP00633, 4DP12110, 4DP12110, 4DP12554, 7KGEM00035 | 4DP-L2-200*, 4DP00001*, 4DP11110*, 4DP11120*, 4DP12130*, 4DP12140, 4DP12736*, 4DP13240*, 4DP16130*, 4DP240150*, 4DP5110*, 4DP5120, 4DP5210*, 4DX12766* |